

Commercial
Circuit Protection
Cable Management

Crabtree



Electrium's purpose built Commercial Centre in Cannock, Staffordshire

Crabtree's range of circuit protection and control products includes a comprehensive range of distribution boards, panelboards and enclosed fuse switch switchgear, ideal for commercial and industrial applications

The Polestar Compact distribution boards are complemented with a range of outgoing devices, including MCBs and RCBOs in 18mm modules but rated at an advantageous high performance 16kA.

The Powerstar MCCB Panel-Board range is extremely flexible and suitable for on site customisation for the more basic applications and the range is also available via the company's factory built assembly operation for the more complex solutions. With additional facilities such as surge protection and metering on incoming and outgoing ways this range easily meets the circuit protection needs of the modern energy conscious installation environment.

Enclosed fuse switch combination units and Isolators provide for the single circuit applications of sub mains or large loads.

This comprehensive off the shelf range is backed up by a factory build service that will help designer and installer to meet the demands of commercial and industrial installations. Whether you are buying a selection of components or specifying a large project the Crabtree sales team, quotations service and technical support team are there to help with all of your needs.

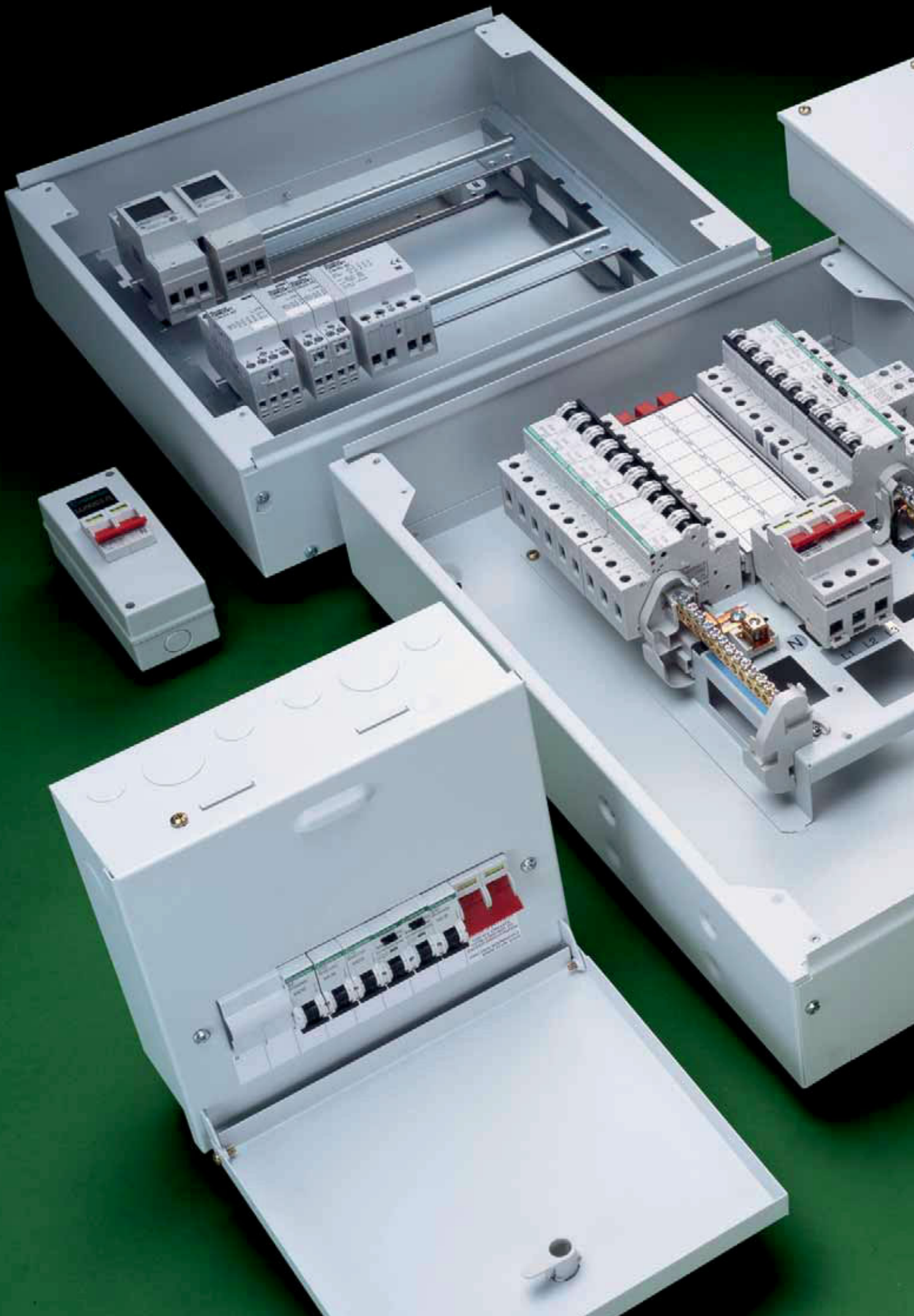
Take a closer look at the options available from Crabtree and discover how we can help you to maintain your competitive edge.

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All Crabtree products comply with the applicable British Standard specification and should be installed by suitably qualified personnel in accordance with the requirements of relevant legislation, regulations (including IEE Wiring Regulations) and the accepted practice in the industry.

The products listed or described in this publication may be protected by one or more patents, and/or registered designs and/or applications. A full list of patents registered designs and applications may be obtained from the company secretary of Electrium Limited.



MCBs AND DISTRIBUTION BOARDS

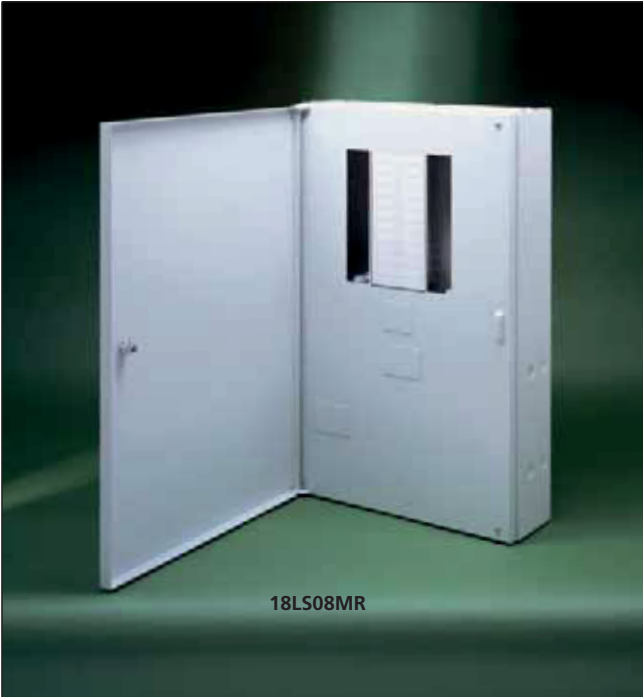
Devices

- 10kA Miniature Circuit Breakers
- 6A - 63A
- Single, Double and Triple Pole
- Type B, C & D Characteristics
- Single Module RCBOs
- 6A - 50A
- Type B & C Characteristics

System

- 125A SPN & TPN Distribution Boards
- Integral Metering options
- Incoming Switch Disconnectors TP & 4P to 125A
4P RCCBs to 100A
- DIN Rail/Service Centres available 'Built in'
or 'Add on'
- Paint Finish - Grey Powder Coat to RAL 7035




18LS08MR
LOADSTAR 125A 'METER READY' TYPE B DISTRIBUTION BOARD

No of Ways	H	W	D	List No.
4	490	430	155	18LS04MR
6	570	430	155	18LS06MR
8	650	430	155	18LS08MR
12	815	430	155	18LS12MR
16	895	430	155	18LS16MR
20	1000	430	155	18LS20MR
24	1140	430	155	18LS24MR

- Integral Metering option

ADD-ON 12W LOADSTAR 'L' BOARD

No of Ways	H	W	D	List No.
12	675	430	155	18LS12A
Vertical connection kit				18LK12V

- 18LS12A 'Add-on' Board is designed to fit above 16, 20 & 24 way 'L' Boards, to create 28, 32 & 36 way TP Boards
- 18LK12V kit connects 18LS12A to 16, 20 & 24 way Boards

LOADSTAR 125A 'STANDARD' TYPE B FLUSH DISTRIBUTION BOARDS

No of Ways	H	W	D	List No.
4	540	480	155	18LF04
6	620	480	155	18LF06
8	700	480	155	18LF08
12	865	480	155	18LF12
16	945	480	155	18LF16
20	1025	480	155	18LF20
24	1190	480	155	18LF24

LOADSTAR 125A 'STANDARD' TYPE B DISTRIBUTION BOARD WITH INTEGRAL DIN RAIL

No of Ways	H	W	D	List No.
4	650	430	155	18LS04D
8	815	430	155	18LS08D
12	975	430	155	18LS12D
16	1140	430	155	18LS16D
20	1140	430	155	18LS20D

- DIN rail to accommodate up to 18 modules of control devices Contactor, Timer etc.
- DIN rail easily removed to assist cabling
- All devices - Incomer, MCBs & Control equipment - behind common front plate and outer door

LOADSTAR 125A 'IP66' TYPE B DISTRIBUTION BOARD

No of Ways	H	W	D	List No.
4	800	500	215	IP18LS04
6	800	500	215	IP18LS06
8	800	500	215	IP18LS08
12	1000	500	215	IP18LS12
16	1000	500	215	IP18LS16

- Boards consist of IP66 steel enclosure, door & interior Incomer kit and MCB extra as for 'L' Boards above

LOADSTAR 125A TYPE A DISTRIBUTION BOARD

No of Ways	H	W	D	List No.
5	235	188	128	18SN05
8	235	242	128	18SN08
11	235	293	128	18SN11
14	235	343	128	18SN14
19	235	437	128	18SN19

- Board supplied with 125A DP Switch Disconnecter MCBs to be specified and ordered separately


18LS08D

18SN14

LOADSTAR 125A TYPE B DISTRIBUTION BOARDS

- Incoming options - **order separately**:
 - 125A Switch Disconnecter TP/4P - 50mm²
 - 100A RCCB 4P - 35mm²
 - 125A Direct Cable - 50mm²
- Integral metering available with Meter Ready (MR) board utilising a TP Incoming option
- Busbars rated at 125A
- Full compliment of Neutral & Earth terminals Incoming maximum 70mm² Outgoing maximum 25mm²
- Allows the fixture of dual Earth bars
- Clean Earth kit available
- All boards supplied as standard with hinged outer door and catch (lock is optional extra) and removable top/bottom gland plates
- Neutral busbar supports incorporate an integral MCB end stop
- BS EN 60439-3



18LS08MR



18LF08



18LS08D

LOADSTAR 125A INCOMER OPTIONS



125SW3

125SW4



100SW2

18R100/30/4



18LK125



18LKD70

LOADSTAR 125A INCOMING OPTIONS

Order Device and Kit (where required) separately.

Switch Disconnecter, modular (50mm ²)	Device	Kit	
40A TP	40SW3		
63A TP	63 SW3	None	
100A TP	100SW3	Required	
125A TP	125SW3		
40A 4P	40SW4	18LK125	
63A 4P	63SW4	18LK125	
100A 4P	100SW4	18LK125	
125A 4P	125SW4	18LK125	
100A DP (TP to SP conversion)	100SW2	18LKTPSP	
125A DP (TP to SP conversion)	125SW2	18LKTPSP	
RCCB (35mm ²)	Device	Kit	
40A 4P	30mA	18R40/30/4	18LK125
	100mA	18R40/100/4	18LK125
	300mA	18R40/300/4	18LK125
63A 4P	30mA	18R63/30/4	18LK125
	100mA	18R63/100/4	18LK125
	300mA	18R63/300/4	18LK125
100A 4P	30mA	18R100/30/4	18LK125
	100mA	18R100/100/4	18LK125
	300mA	18R100/300/4	18LK125
100A 4P 100mA Time Delay	241/100TD	18LK125	
100A DP 30mA	18R100/30/2	18LKTPSP	
100A DP 100mA	18R100/100/2	18LKTPSP	
100A DP 100mA Time Delay	18R100/100/2TD	18LKTPSP	

Special oversize Incoming Cable connection kit for use with TP Sw Disc above.

Accommodate up to 120mm² TP Sw Disc only. **18LKD120**

Direct Connection	Device	Kit
Incoming Cable Connection (50mm ²)	18LKD50	None
Outgoing Cable Connection Kit/Shroud (50mm ²) (Set of 3 Cable Clamps + Shroud)	18LKD70	Required



18AS2

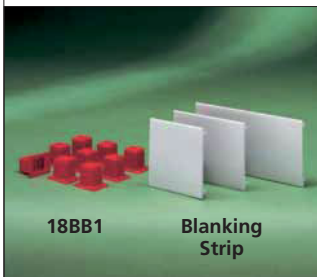


18DIN18



18GP2S

18GP4M



18BB1

Blanking Strip

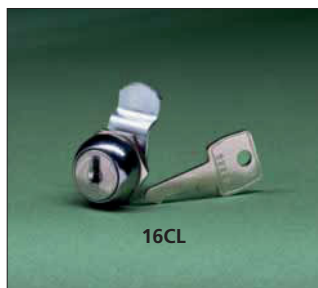


CSBC

18MBP1



MCBLD + 748



16CL



17CC
(fitted to Earth Bar)



CLEB12

CLNB12

DINRAIL, ROWBOARD, SERVICE CENTRES

Rowboard:

- Suitable for 'Stand-Alone' use or 'Add-On' above surface 'L' type board.
- Each row will accommodate 18 off 18mm module wide DIN Rail mounted devices.
- Main Neutral and Earth Bars included, along with provision for additional 'Mini' Neutral and Earth bars.

No of Rows	H	W	D	Surface
1	245	430	155	18AS1
2	410	430	155	18AS2
3	570	430	155	18AS3
4	735	430	155	18AS4
5	815	430	155	18AS5

Service Centre/DIN Rail Board:

- 'Add-On' for fixture above or below surface 'L' Type board.
- Equipped with easily removed DIN Rail to accommodate 18 or 36, 18mm module wide DIN Rail mounted devices
- 245mm & 410mm high

18 Module	18DIN18
36 Module (2 Rows of 18)	18DIN36

Cable Spreader Box

Add on Enclosure, 245mm high, Blank front cover plate	18SB
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INDIVIDUAL ENCLOSURES

	H	W	D	Insulated
2 Modules wide	152	63	63	18GP2S
4 Modules wide	152	79	61	18GP4S
	H	W	D	Metalclad
2 Modules wide	225	90	67	18GP2M
4 Modules wide	317	136	82	18GP4M

GENERAL LOADSTAR ACCESSORIES TP & SP

	List No
Cylinder Lock & Key	16CL
MCB Locking device (excl. lock)	MCBLD
Padlock & Key for use with MCBLD	748
Clean Earth Bar Kit	18CEBK
(4 to 12 way=1 kit, 16 to 24 way=2 kits).	
Blanking Strip - 6 Individual 1 module wide pieces	18BP1/6
Blanking Strip - 12 Individual 1 module wide pieces	18BP1/12
Blanking Strip - 4 lengths each 3 modules wide	18PB3/4
Blanking Strip - 2 lengths each 12 modules wide	18BP12/2
Clip In Blank SP Moulding	CSBC
Busbar cross connector insulator - pack of 9	18BB1
SP MCB size Blank (shields MCB & Busbar Terminal)	18MBP1
Cable clamp assembly (70mm ²) - pack of 3	17CC
● Previously manufactured DBs utilise 18CB1 blank pieces	

ADDITIONAL EARTH BAR KITS

Additional Earth Bars to fit TP Distribution Boards

No of Ways	List No	No of Ways	List No
4	18EB04	16	18EB16
6	18EB06	20	18EB20
8	18EB08	24	18EB24
12	18EB12		

Earth and Neutral bar, 10mm² cable max, for use with DIN Rail

	NEUTRAL	EARTH
7 Terminals	CLNB07	CLEB07
12 Terminals	CLNB12	CLEB12
15 Terminals	CLNB15	CLEB15


6HS MCBs
SINGLE POLE MCBs - 10kA

RATING AMPS	B TYPE	C TYPE	D TYPE
6A	6HS06B	6HS06C	6HS06D
10A	6HS10B	6HS10C	6HS10D
16A	6HS16B	6HS16C	6HS16D
20A	6HS20B	6HS20C	6HS20D
25A	6HS25B	6HS25C	6HS25D
32A	6HS32B	6HS32C	6HS32D
40A	6HS40B	6HS40C	6HS40D
50A	6HS50B	6HS50C	6HS50D
63A	6HS63B	6HS63C	6HS63D

BS EN 60898


6HD32B
6HD32C
DOUBLE POLE MCBs - 10kA

RATING AMPS	B TYPE	C TYPE	D TYPE
6A	6HD06B	6HD06C	6HD06D
10A	6HD10B	6HD10C	6HD10D
16A	6HD16B	6HD16C	6HD16D
20A	6HD20B	6HD20C	6HD20D
25A	6HD25B	6HD25C	6HD25D
32A	6HD32B	6HD32C	6HD32D
40A	6HD40B	6HD40C	6HD40D
50A	6HD50B	6HD50C	6HD50D
63A	6HD63B	6HD63C	6HD63D

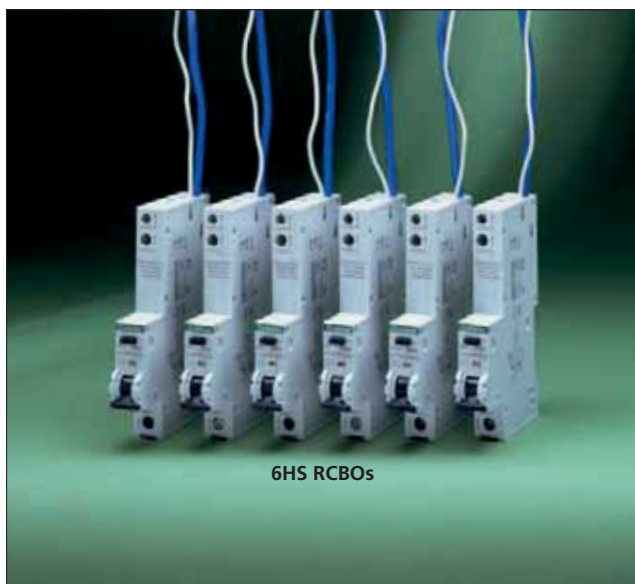
Not suitable for use within Distribution Boards

BS EN 60898


6HT40B
6HT32C
TRIPLE POLE MCBs - 10kA

RATING AMPS	B TYPE	C TYPE	D TYPE
6A	6HT06B	6HT06C	6HT06D
10A	6HT10B	6HT10C	6HT10D
16A	6HT16B	6HT16C	6HT16D
20A	6HT20B	6HT20C	6HT20D
25A	6HT25B	6HT25C	6HT25D
32A	6HT32B	6HT32C	6HT32D
40A	6HT40B	6HT40C	6HT40D
50A	6HT50B	6HT50C	6HT50D
63A	6HT63B	6HT63C	6HT63D

BS EN 60898

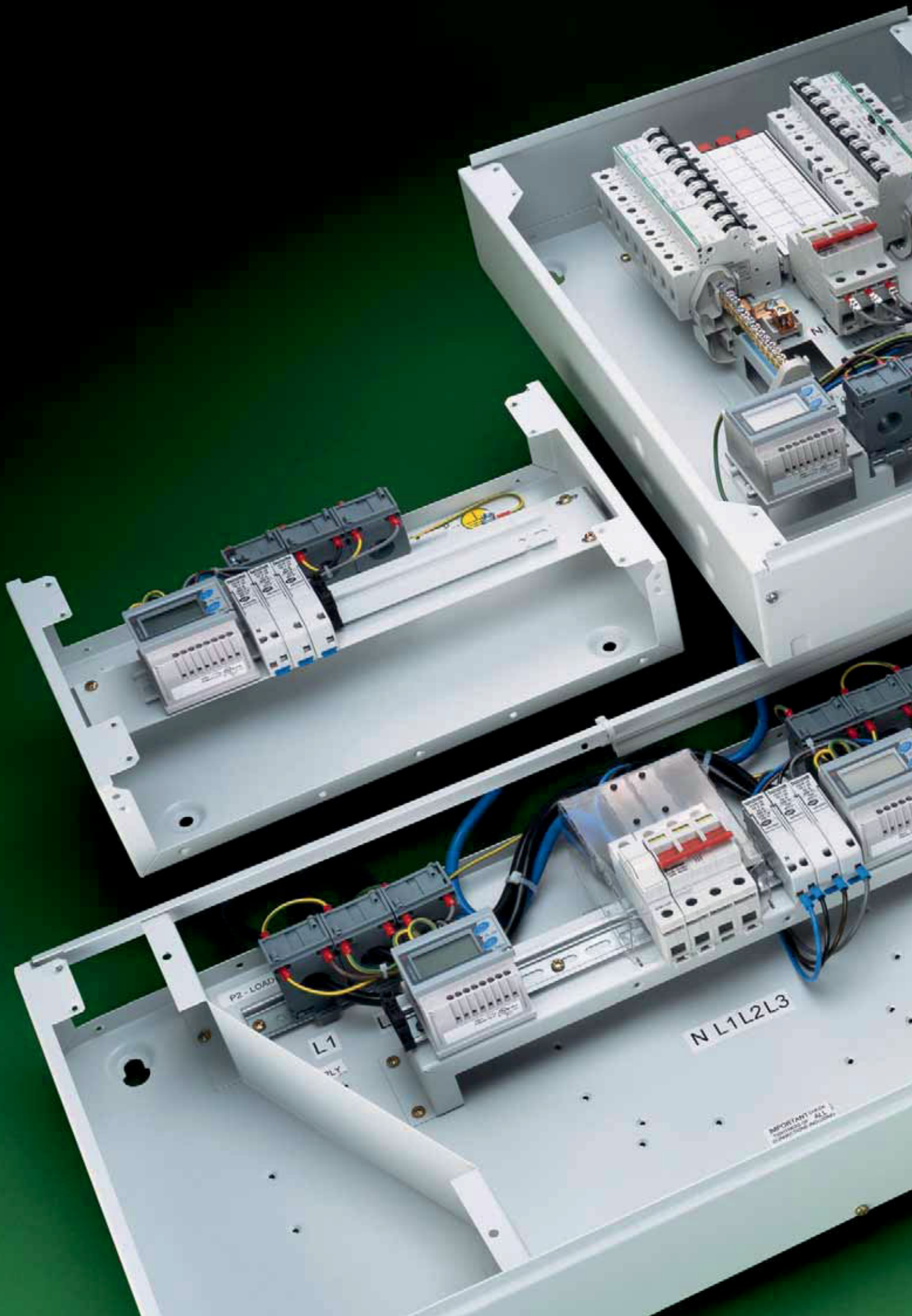

6HS RCBOs
RCBOs SINGLE MODULE - 30mA SENSITIVITY - 10kA

RATING AMPS	B TYPE	C TYPE
6A	6HSR06/30B	6HSR06/30C
10A	6HSR10/30B	6HSR10/30C
16A	6HSR16/30B	6HSR16/30C
20A	6HSR20/30B	6HSR20/30C
32A	6HSR32/30B	6HSR32/30C
40A	6HSR40/30B	6HSR40/30C
50A	6HSR50/30B	6HSR50/30C

18mm wide, suitable for use within Loadstar Distribution Boards 30mA sensitivity, 'B' or 'C' characteristic, unswitched Neutral.

 RCBOs with longer incoming neutral flying leads (1.2m) are available - Suffix the Type C list number with /LT. (eg: **6HSR32/30C/LT**).

IEC/EN 61009



P2 - LOAD

L1

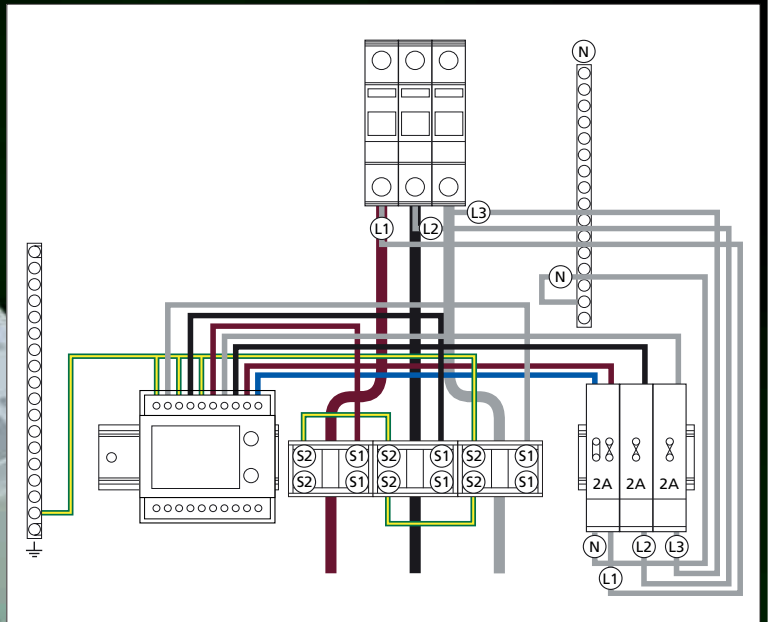
N L1L2L3

IMPORTANT!
DO NOT TOUCH ANY
INTERNAL PARTS

METERING OPTIONS... METERING SOLUTIONS

Part L2 of the Building Regulations, covering the energy efficiency requirements of new buildings other than domestic dwellings, recognises the essential role that is played by metering. Correctly installed meters provide information that is necessary to the implementation of an effective energy management plan.

Loadstar pulsed output and Modbus output metering options provide simple and straightforward solutions. Integral energy monitoring can be applied to all Meter Ready (MR) Distribution Boards, whilst two 'add-on' enclosures, single or dual, ensure all Loadstar surface 125A type B Distribution Boards are catered for.





125A INTEGRAL METER KIT

Integral meter kit suitable for mounting within 125A type B **Meter Ready** (MR) Distribution Boards* Includes a Digital energy meter, three current transformers, fuses, wiring looms and mounting base plate.

Description	LIST No
125A Integral Meter Kit	LS125MPKIT
125A Integral Meter Kit (MID)	LS125MIDMPKIT

*Integral meter kits are designed for use in conjunction with modular three pole incoming options only. For other incoming options select the 'add-on' assembly seen below.



125A SINGLE METER PACKS

245mm high 'add on' assemblies suitable for mounting directly beneath any surface 125A type B Distribution Board. Includes a digital energy meter, three current transformers and all associated fuses and wiring. Enclosures have a slotted front plate and hinged door with catch offering a lockable option.

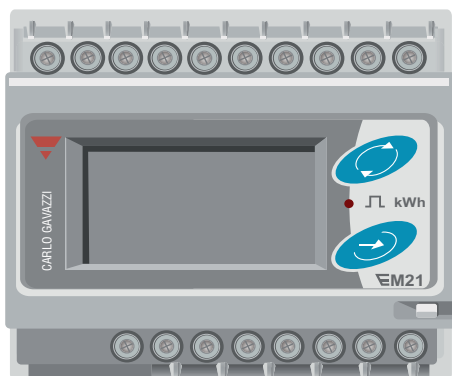
Description	LIST No
125A 'Add-on Meter Pack	18ML125



125A DUAL METER PACKS

410mm high 'add on' assemblies suitable for mounting directly beneath two surface 125A type B Distribution Boards. Includes two digital energy meters six current transformers all associated fuses & wiring and flexible interconnections to Distribution Boards. Provides single point isolation while dual meters allow for separate monitoring of **Light** and small **Power** energy consumption.

Description	LIST No
125A 'Add-on' Dual Meter Pack	18ML125LP



Energy meters within all Loadstar final assemblies display values of:

kWh	Kilowatt hours	A L2	Current
kW (Σ)	Real Power (system)	A L3	Current
kvarh	Kilovolt amp reactive hours	V L1-2	Line Voltage
kvar (Σ)	Reactive Power (system)	V L2-3	Line Voltage
PF (Σ)	Power Factor (system)	V L3-1	Line Voltage
Hz (Σ)	Frequency (system)	V L1	Phase Voltage
PF L1	Power Factor	V L2	Phase Voltage
PF L2	Power Factor	V L3	Phase Voltage
PF L3	Power Factor		
A L1	Current		

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature.

MID meters are supplied with a pulsed output as a standard feature.



SUB METERING

Sub metering provides an awareness of energy use. Trends of minimum and maximum demand become visible enabling any instances of energy waste to be identified.

Metering alone cannot reduce energy consumption or subsequent carbon emissions - **action taken based upon knowledge gained from an effective metering strategy can.**

Schedule 7 of the Electricity Act 1989 requires that all meters must be approved for use in a billing situation. MID (Measuring Instruments Directive) approved meters have since 2006, been approved for billing purposes across the EU.



C7KT1531

80A SP DIRECT CONNECTION ENERGY METERS

Description	LIST No
Single Phase direct connection energy meter	C7KT1531
Single Phase direct connection energy meter (MID calibrated)	C7KT1533

- Direct connect kWh meter
- Pulsed output
- DIN rail mounting
- 35mm² terminal capacity
- Green backlit display



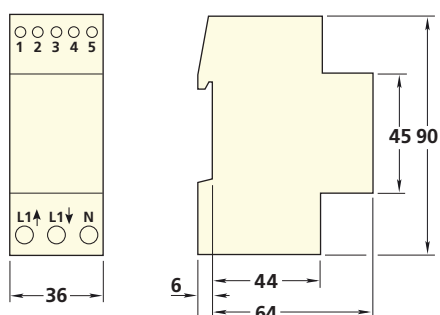
C7KT1543

80A TP DIRECT CONNECTION ENERGY METERS

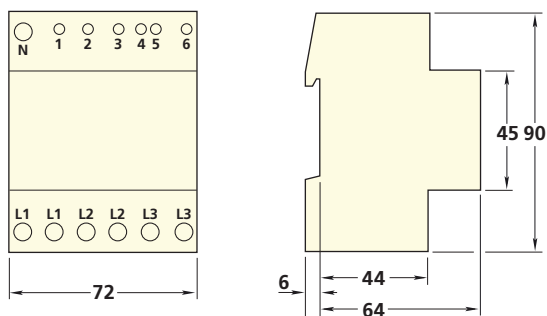
Description	LIST No
Three Phase direct connection energy meter	C7KT1543
Three Phase direct connection energy meter (MID calibrated)	C7KT1545

- Direct connect kWh meter
- Pulsed output
- DIN rail mounting
- 35mm² terminal capacity
- Green backlit display

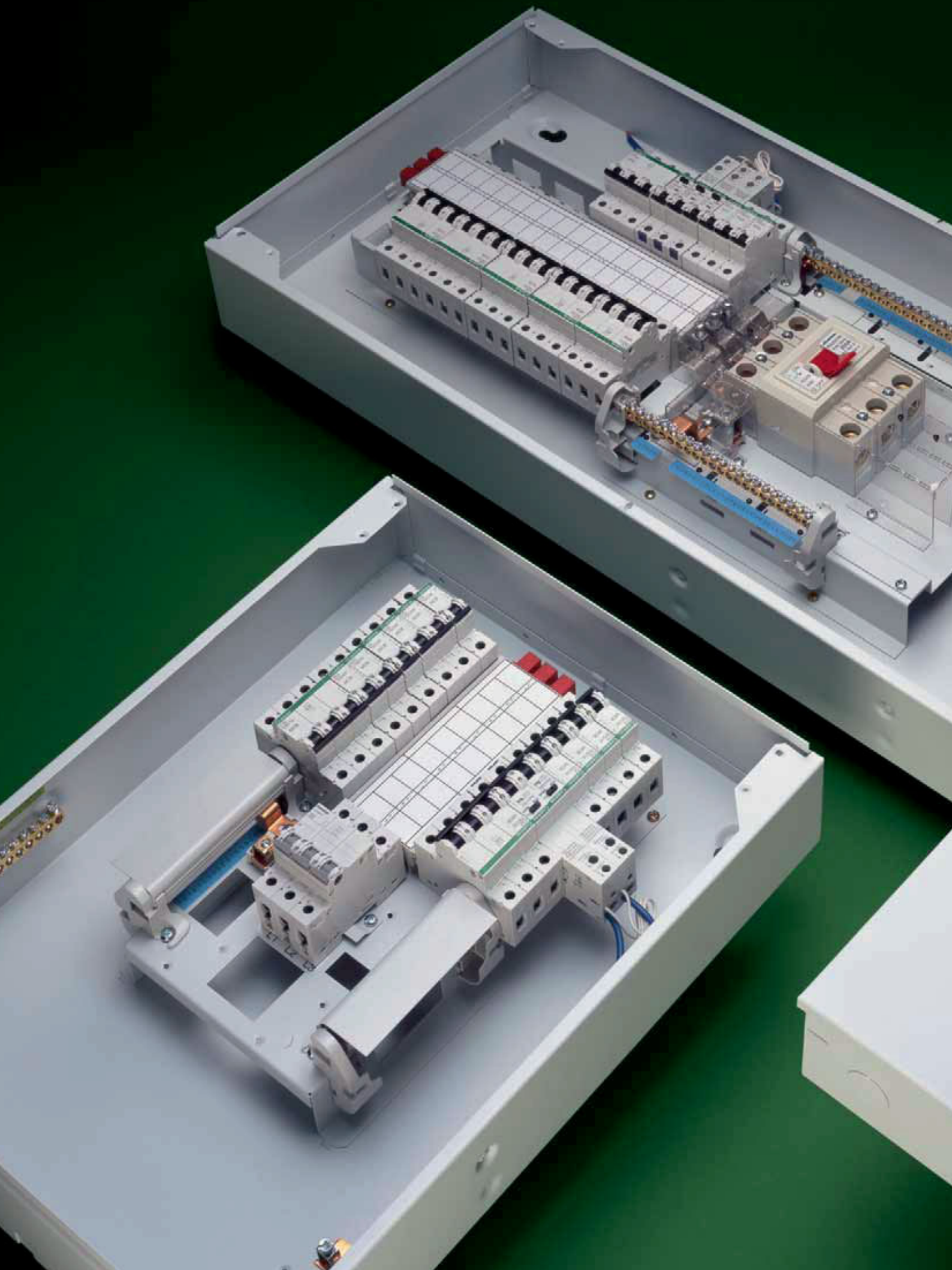
ENERGY METER DIMENSIONS



C7KT1 531 & C7KT1 533



C7KT1 543 & C7KT1 545



POLESTAR COMPACT

MCBs, RCBOs AND DISTRIBUTION BOARDS

- MCBs - 6A to 63A
- Type B, C and D Characteristics
- Single, Double and Triple Pole
- 18mm modular width
- 16kA BS EN 60898
- RCBOs - 6A to 50A
- Type C Characteristic
- Single Pole
- 18mm wide
- 16kA BS EN 61009

System

- TPN Boards rated 200A
 - SPN Boards rated 125A
 - Paint Finish, Epoxy Powder, Light Grey RAL 7035 for standard boards and shade 697 to BS381C for IP66
 - Custom Built 'Specials' Service




18PSC12MR

18PSC14/21A

125A TYPE B DISTRIBUTION BOARDS 'METER READY' SURFACE

No of Ways	H	W	D	List No.
4	490	430	155	18PSC04MR
6	570	430	155	18PSC06MR
8	650	430	155	18PSC08MR
12	815	430	155	18PSC12MR
16	895	430	155	18PSC16MR
20	1000	430	155	18PSC20MR
24	1140	430	155	18PSC24MR

'METER READY' SURFACE IP66

No of Ways	H	W	D	List No.
4	800	500	215	IP18PSC04MR
6	800	500	215	IP18PSC06MR
8	800	500	215	IP18PSC08MR
12	1000	500	215	IP18PSC12MR
16	1000	500	215	IP18PSC16MR

125A TYPE A DISTRIBUTION BOARDS MAIN SWITCH DISCONNECTOR

No of Ways	H	W	D	List No.
5	255	188	131	18PSC05/21A
8	255	242	131	18PSC08/21A
11	255	293	131	18PSC11/21A
14	255	343	131	18PSC14/21A
19	255	438	131	18PSC19/21A
28	500	343	131	18PSC28/21A

- 125A double pole main switch control for all MCB ways.
- 125A Busbar.
- 28 way distribution boards supplied in 2 bank format.

80A 30mA MAIN INCOMING RCCB

No of Ways	H	W	D	RCCB type	List No.
5	255	188	131	AC	18PSC05/33A
8	255	242	131	AC	18PSC08/33A
11	255	293	131	AC	18PSC11/33A

80A 100mA MAIN INCOMING RCCB

No of Ways	H	W	D	RCCB type	List No.
5	255	188	131	AC	18PSC05/31A
8	255	242	131	AC	18PSC08/31A
11	255	293	131	AC	18PSC11/31A

DUAL RCCB SPLIT-LOAD

No. of Ways	80A 30mA RCCB ways	H	W	D	RCCB type	List No.
10	4+6	255	343	131	AC	18PSC10/S413A
10	5+5	255	343	131	AC	18PSC10/S513A
10	6+4	255	343	131	AC	18PSC10/S613A

- 125A double pole main switch control for all MCB ways
- Final circuit additional protection by two 80A 30mA RCCBs

125A TYPE B DISTRIBUTION BOARDS AND THEIR INCOMING OPTIONS

- Incoming options - **order separately**:
 - 125A Switch Disconnecter TP/4P - 50mm²
 - 100A RCCB 4P - 35mm²
 - 125A Direct Cable - 50mm²
- Integral metering available with Meter Ready (MR) board utilising a TP Incoming option
- Busbars rated at 125A
- IP3X (Door Closed) or IP66
- Full compliment of Neutral & Earth terminals
Incoming maximum 70mm²
Outgoing maximum 25mm²
- Allows the fixture of dual Earth bars (IP3X)
- Clean Earth kit available (IP3X)
- All IP3X boards are supplied as standard with hinged outer door, catch (lock is optional extra) and removable top/bottom gland plates
- Neutral busbar supports incorporate an integral MCB end stop
- BS EN 60439-3



18PSC12MR



IP18PSC12MR

POLESTAR COMPACT 125A INCOMER OPTIONS



1252SD

1253SD

1254SD

SWITCH DISCONNECTORS AND DIRECT CONNECTION

Order Device and Kit (where required) separately.

Switch Disconnecter	Device	Kit
125A 2P	1252SD	18PSC2PLK
125A 3P	1253SD	Not Required
125A 4P	1254SD	18PSC4PLK
Direct Connection	Device	Kit
125A 3P	125DCB	Not Required

- 50mm² Terminal capacity
- IEC/EN 60947-3



241/100

RESIDUAL CURRENT CIRCUIT BREAKERS

	Device	Kit
100A 4P 30mA	241/030	18PSC4PLK
100A 4P 100mA	241/100	18PSC4PLK
100A 4P 100mA TD	241/100TD	18PSC4PLK
100A 4P 300mA	241/300	18PSC4PLK
100A 4P 300mA TD	241/300TD	18PSC4PLK

- Type AC
- 35mm² Terminal capacity
- BS EN 61008



18PSC2PLK



18PSC4PLK



18PSC212MR

**200A TYPE B DISTRIBUTION BOARDS
'METER READY' SURFACE**

No of Ways	H	W	D	List No.
4	768	430	155	18PSC204MR
6	822	430	155	18PSC206MR
8	876	430	155	18PSC208MR
12	984	430	155	18PSC212MR
16	1092	430	155	18PSC216MR
20	1200	430	155	18PSC220MR
24	1308	430	155	18PSC224MR



IP18PSC212MR

'METER READY' SURFACE IP66

No of Ways	H	W	D	List No.
4	800	500	215	IP18PSC204MR
6	800	500	215	IP18PSC206MR
8	800	500	215	IP18PSC208MR
12	1000	500	215	IP18PSC212MR
16	1000	500	215	IP18PSC216MR

200A TYPE B DISTRIBUTION BOARDS AND THEIR INCOMING OPTIONS

- Incoming options - **order separately:**
- Integral metering available
- Busbars rated at 200A
- IP3X (Door Closed) or IP66
- Full compliment of Neutral & Earth terminals
Incoming maximum 70mm²
Outgoing maximum 25mm²
- Allows the fixture of dual Earth bars (IP3X)
- Clean Earth kit available (IP3X)
- All IP3X boards are supplied as standard with hinged outer door, catch (lock is optional extra) and removable top/bottom gland plates
- Neutral busbar supports incorporate an integral MCB end stop
- BS EN 60439-3



18PSC212MR



IP18PSC212MR

POLESTAR COMPACT 200A INCOMER OPTIONS



200/SDB

SWITCH DISCONNECTORS AND DIRECT CONNECTION

Switch Disconnecter	List No
200A 3P	200/SDB
200A 2P	200/SDBDP

Direct Connection	
200A 3P	200/DCB

- 120mm² Terminal capacity
- All Incomers are supplied complete with mounting kit, links & fixing screws



2005MB

MOULDED CASE CIRCUIT BREAKERS

200A 3P	2003MB
200A 4P	2004MB

- 185mm² terminal capacity
- All Incomers are supplied complete with mounting kit, links & fixing screws
- IEC 60947-2, EN 60947-2



200/SDBDP



18PSCDIN18



18PSCAS2



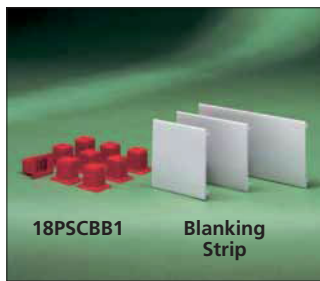
16CL



MCBLD + 748



CSBC 18PSCMBP1



18PSCBB1 Blanking Strip



17CC (fitted to Earth Bar)



CLEB12 CLNB12

DINRAIL, ROWBOARD, SERVICE CENTRES

Service Centre/DIN Rail Board:	List No
18 Module	18PSCDIN18
36 Module (2 Rows of 18)	18PSCDIN36

- 'Add-On' for fixture above or below surface type B board.
- Equipped with easily removed DIN Rail to accommodate 18 or 36 18mm module wide DIN Rail mounted devices
- 245 & 410mm high

Cable Spreader Box

Add on Enclosure, 245mm high, Blank front cover plate	18PSCSB
---	----------------

Rowboard:

No of Rows	H	W	D	
1	245	430	155	18PSCAS1
2	410	430	155	18PSCAS2
3	570	430	155	18PSCAS3
4	735	430	155	18PSCAS4
5	815	430	155	18PSCAS5

- Suitable for 'Stand-Alone' use or 'Add-On' above surface type B board.
- Each row will accommodate 18 off 18mm module wide DIN Rail mounted devices.
- Main Neutral and Earth Bars included, along with provision for additional 'Mini' Neutral and Earth bars.

GENERAL POLESTAR ACCESSORIES TP & SP

	List No
Cylinder Lock & Key	16CL
MCB Locking device (excl. lock)	MCBLD
Padlock & Key for use with MCBLD	748
Clean Earth Bar Kit type B Boards only.	18CEBK
(4 to 12 way=1 kit, 16 to 24 way=2 kits).	
SP MCB size Blank (shields MCB & Busbar Terminal)	18PSCMBP1
Blanking Strip - 6 Individual 1 module wide pieces	18PSCBP1/6
Blanking Strip - 4 lengths each 3 modules wide	18PSCBP3/4
Blanking Strip - 2 lengths each 12 modules wide	18PSCBP12/2
Clip In Blank SP Moulding	CSBC
Busbar cross connector insulator - pack of 9	18PSCBB1
Cable clamp assembly (70mm ²) - pack of 3	17CC

ADDITIONAL EARTH BAR KITS

Additional Earth Bars to fit TP Distribution Boards

No of Ways	List No	No of Ways	List No
4	18EB04	16	18EB16
6	18EB06	20	18EB20
8	18EB08	24	18EB24
12	18EB12		

Earth and Neutral bar, 10mm² cable max, for use with DIN Rail

	NEUTRAL	EARTH
7 Terminals	CLNB07	CLEB07
12 Terminals	CLNB12	CLEB12
15 Terminals	CLNB15	CLEB15



MCBs

SINGLE POLE MCBs - 16kA

RATING AMPS	B TYPE	C TYPE	D TYPE
6A	70B/06	70C/06	70D/06
10A	70B/10	70C/10	70D/10
16A	70B/16	70C/16	70D/16
20A	70B/20	70C/20	70D/20
32A	70B/32	70C/32	70D/32
40A	70B/40	70C/40	70D/40
50A	70B/50	70C/50	70D/50
63A	70B/63	70C/63	70D/63

- BS EN 60898
- Type B (3–5In), C (5–10In), D (10–20In) classification
- Short circuit duty rating: Type B/C/D 16000A 240V/415V 50Hz
- Terminal capacity up to 35mm² cable
- 18mm modular width



72B/20

72C/10

DOUBLE POLE MCBs - 16kA

RATING AMPS	B TYPE	C TYPE	D TYPE
6A	72B/06	72C/06	72D/06
10A	72B/10	72C/10	72D/10
16A	72B/16	72C/16	72D/16
20A	72B/20	72C/20	72D/20
32A	72B/32	72C/32	72D/32
40A	72B/40	72C/40	72D/40
50A	72B/50	72C/50	72D/50
63A	72B/63	72C/63	72D/63

- BS EN 60898
- Type B (3–5In), C (5–10In), D (10–20In) classification
- Short circuit duty rating: Type B/C/D 16000A 240V/415V 50Hz
- Terminal capacity up to 35mm² cable
- 18mm modular width
- Not for use within standard type A or B distribution boards



73C/10

73C/32

TRIPLE POLE MCBs - 16kA


RATING AMPS	B TYPE	C TYPE	D TYPE
6A	73B/06	73C/06	73D/06
10A	73B/10	73C/10	73D/10
16A	73B/16	73C/16	73D/16
20A	73B/20	73C/20	73D/20
32A	73B/32	73C/32	73D/32
40A	73B/40	73C/40	73D/40
50A	73B/50	73C/50	73D/50
63A	73B/63	73C/63	73D/63

- BS EN 60898
- Type B (3–5In), C (5–10In), D (10–20In) classification
- Short circuit duty rating: Type B/C/D 16000A 240V/415V 50Hz
- Terminal capacity up to 35mm² cable
- 18mm modular width

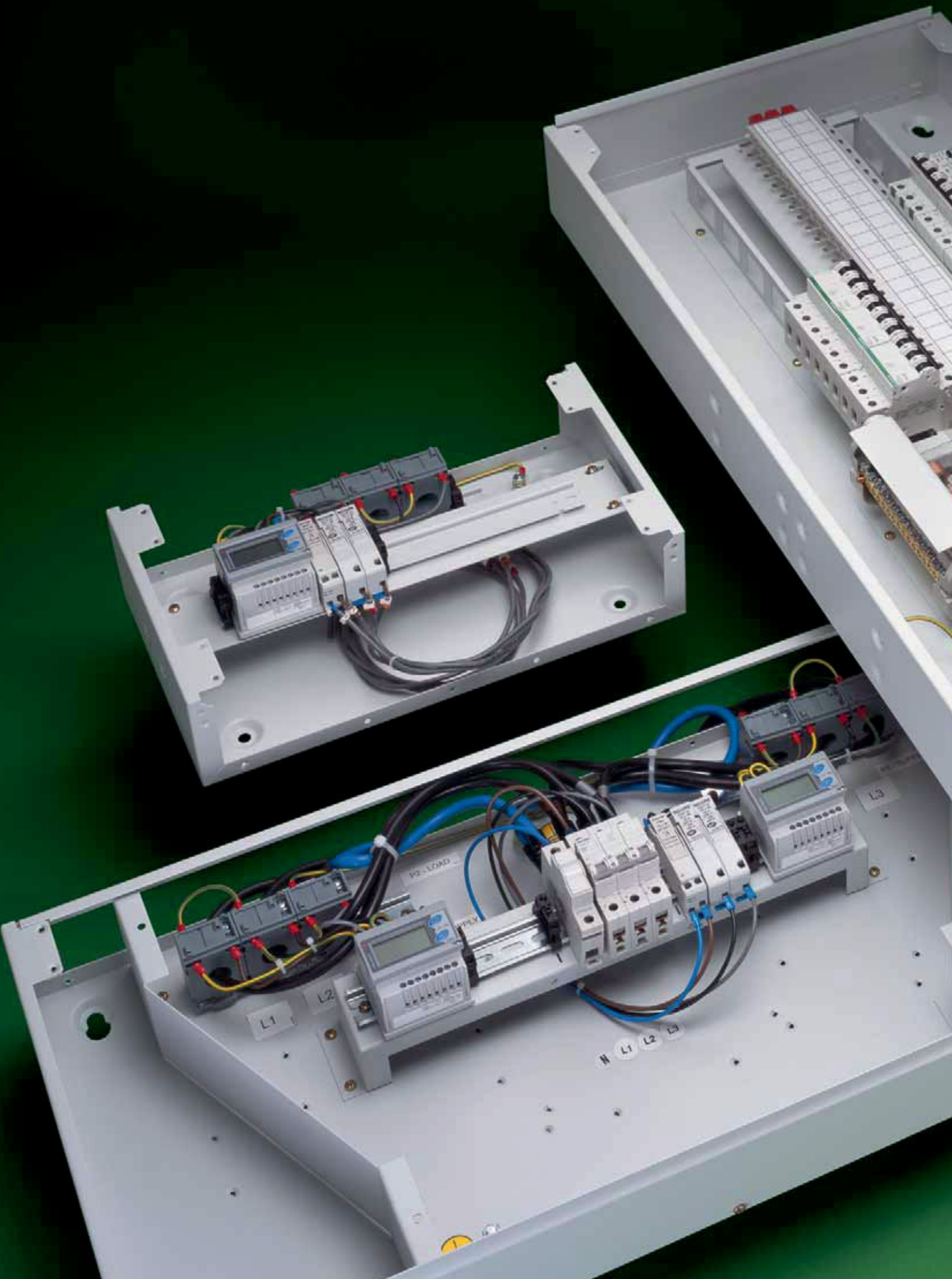


RCBOs

RCBOs SINGLE MODULE - 30mA SENSITIVITY - 16kA

Single Pole MCB Type C Current rating (A)	Type A  List No
6A	701C/063
10A	701C/103
16A	701C/163
20A	701C/203
32A	701C/323
40A	701C/403
50A	701C/503

- Standard compliance BS EN 61009; IEC 1009.
- Short circuit duty rating 16000A 240V 50Hz.
- Terminal capacity up to 16mm² cable.
- 18mm modular width

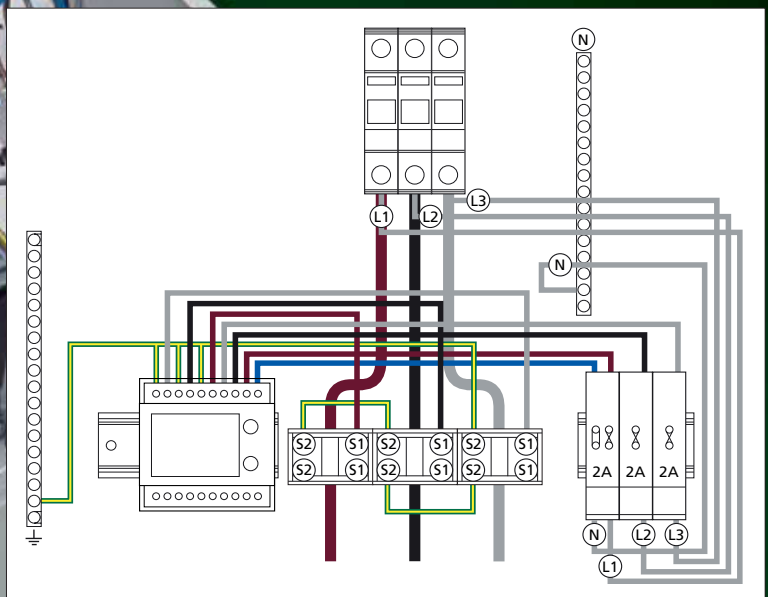


POLESTAR COMPACT

METERING OPTIONS... METERING SOLUTIONS

Part L2 of the Building Regulations, covering the energy efficiency requirements of new buildings other than domestic dwellings, recognises the essential role that is played by metering. Correctly installed meters provide information that is necessary to the implementation of an effective energy management plan.

Polestar Compact pulsed output and Modbus output metering options provide simple and straightforward solutions. Integral energy monitoring can be applied to all Meter Ready (MR) Distribution Boards, whilst two 'add-on' enclosures, single or dual, ensure all Polestar surface 125A & 200A type B Distribution Boards are catered for.



POLESTAR COMPACT SUB METERING OPTIONS



200MP/120



125MP/50



18MPSC125

SUB METERING

Sub metering provides an awareness of energy use. Trends of minimum and maximum demand become visible enabling any instances of energy waste to be identified.

Metering alone cannot reduce energy consumption or subsequent carbon emissions - **action taken based upon knowledge gained from an effective metering strategy can.**

Schedule 7 of the Electricity Act 1989 requires that all meters must be approved for use in a billing situation. MID (Measuring Instruments Directive) approved meters have, since 2006, been approved for billing purposes across the EU.

INTEGRAL METER KIT

Integral meter kits suitable for mounting within 125A or 200A type B **Meter Ready** (MR) Distribution Boards. Includes a Digital energy meter, three current transformers, fuses, wiring looms and mounting base plate.

Description	125A	200A
Integral Meter Kit	125MP/50	200MP/120
Integral Meter Kit (MID)	125MP/50/MID	200MP/120/MID

Description	200A
Integral Meter Kit 185mm ² cable	200MP/185
Integral Meter Kit 185mm ² cable (MID)	200MP/185/MID

- 125A Integral meter kits are designed for use in conjunction with modular three pole incoming options only. For other incoming options select the 'add-on' assembly seen below.
- 200A Meter kits accepting up to 185mm² cable will require the addition of a cable spreader box, 18PSCSB.

SINGLE METER PACKS

245mm high 'add on' assemblies suitable for mounting directly beneath any surface 125A type B Distribution Board. Includes a digital energy meter, three current transformers and all associated fuses and wiring. Enclosures have a slotted front plate and hinged door with catch offering a lockable option.

Description	125A
Add-on Meter Pack	18MPSC125

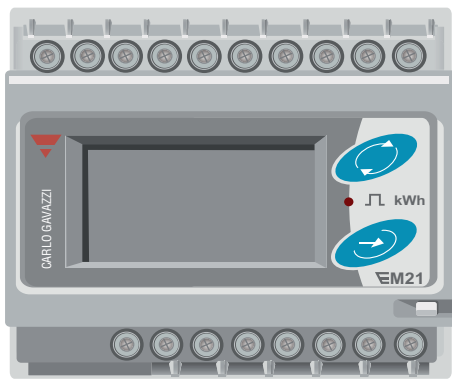


18MPSC125LP

DUAL METER PACKS

410mm high 'add on' assemblies suitable for mounting directly beneath two surface 125A/200A type B Distribution Boards. Includes two digital energy meters, six current transformers, all associated fuses & wiring and flexible interconnections to Distribution Boards. Provides single point isolation while dual meters allow for separate monitoring of **Light** and small **Power** energy consumption.

Description	125A	200A
'Add-on' Dual Meter Pack	18MPSC125LP	18MPSC250LP



Energy meters within all Loadstar final assemblies display values of:

- | | | | |
|-----------------|-----------------------------|---------------|---------------|
| kWh | Kilowatt hours | A L2 | Current |
| kW (Σ) | Real Power (system) | A L3 | Current |
| kvarh | Kilovolt amp reactive hours | V L1-2 | Line Voltage |
| kvar (Σ) | Reactive Power (system) | V L2-3 | Line Voltage |
| PF (Σ) | Power Factor (system) | V L3-1 | Line Voltage |
| Hz (Σ) | Frequency (system) | V L1 | Phase Voltage |
| PF L1 | Power Factor | V L2 | Phase Voltage |
| PF L2 | Power Factor | V L3 | Phase Voltage |
| PF L3 | Power Factor | | |
| A L1 | Current | | |

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature.

MID meters are supplied with a pulsed output as a standard feature.

POLESTAR COMPACT FINAL CIRCUIT METERING OPTIONS



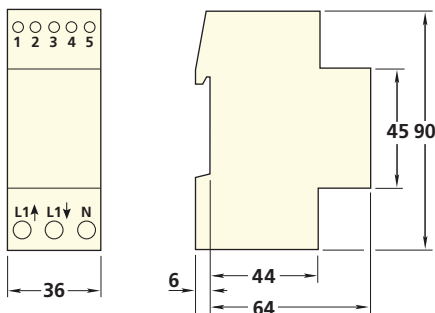
C7KT1531

80A SP & TP DIRECT CONNECTION ENERGY METERS

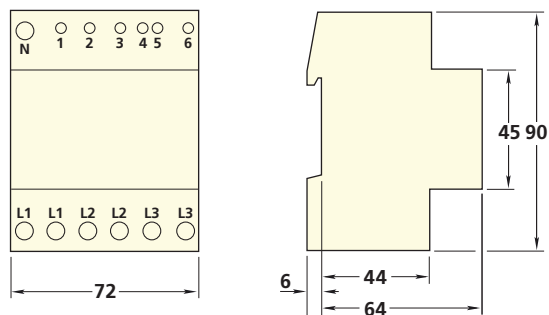
Description	LIST No
Single Phase Direct connection Energy Meter	C7KT1531
Single Phase Direct connection Energy Meter (MID)	C7KT1533
Three Phase Direct connection Energy Meter	C7KT1543
Three Phase Direct connection Energy Meter (MID)	C7KT1545

- Direct Connect kWh meter
- Pulsed Output
- DIN rail Mounting
- 35mm² terminal capacity
- Green Backlit display

ENERGY METER DIMENSIONS



C7KT1531 & C7KT1533



C7KT1543 & C7KT1545



Terminal	Label
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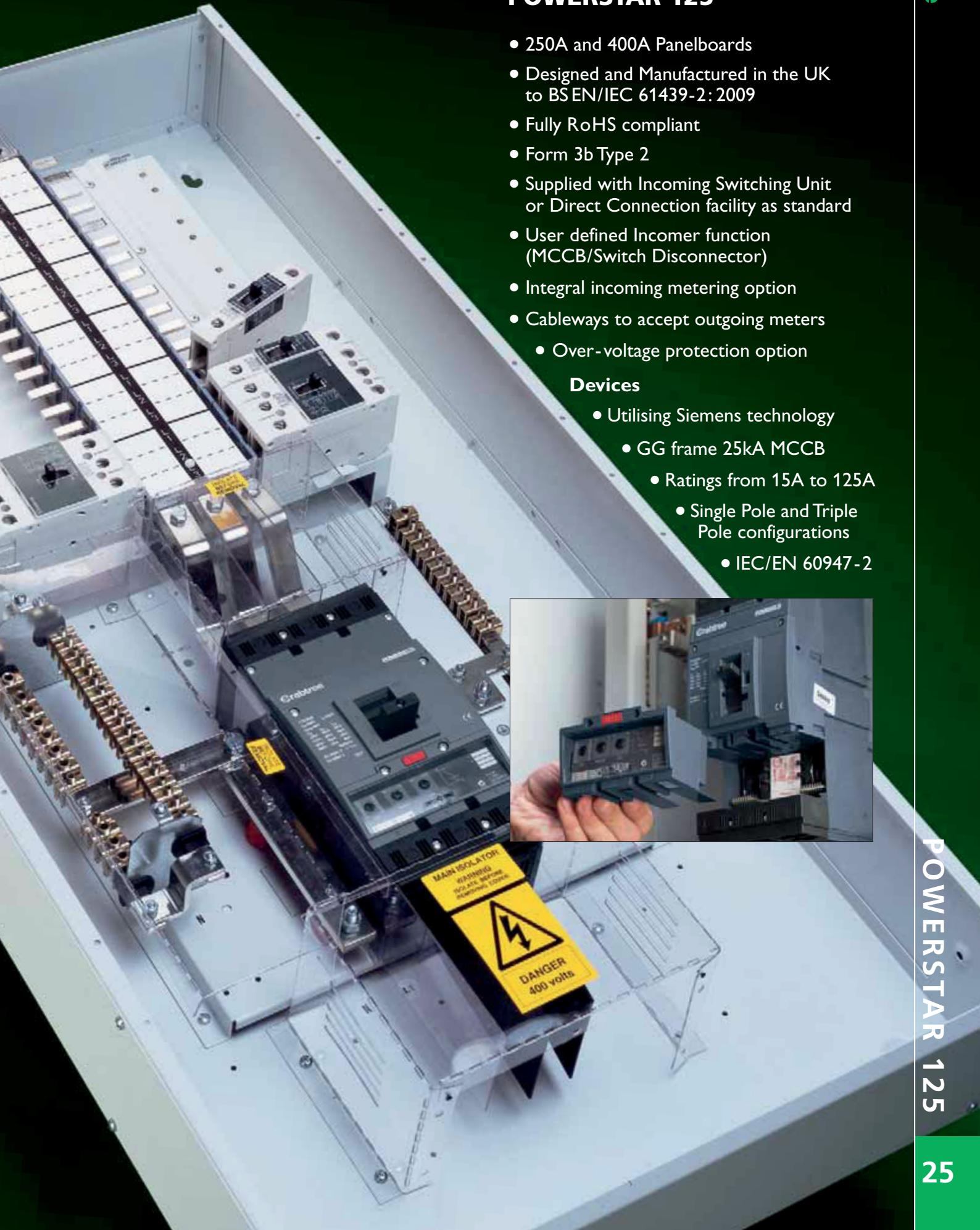
POWERTECH

POWERSTAR 125

- 250A and 400A Panelboards
- Designed and Manufactured in the UK to BSEN/IEC 61439-2: 2009
- Fully RoHS compliant
- Form 3b Type 2
- Supplied with Incoming Switching Unit or Direct Connection facility as standard
- User defined Incomer function (MCCB/Switch Disconnecter)
- Integral incoming metering option
- Cableways to accept outgoing meters
 - Over-voltage protection option

Devices

- Utilising Siemens technology
- GG frame 25kA MCCB
- Ratings from 15A to 125A
- Single Pole and Triple Pole configurations
- IEC/EN 60947-2





17GG2506SW

250A PANELBOARD WITH TP SWITCHING UNIT

	Outgoing ways	Modular Height	Height (mm)	LIST No
250A	6	12	912	17GG2506SW
	8	13	988	17GG2508SW
	12	15	1140	17GG2512SW
	16	17	1292	17GG2516SW

- 250A rated Panelboards
- Busbar 25kA conditional
- IP3X (door closed)
- 120 mm² 4 Core Maximum on Incoming Terminals
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release or Switch Disconnecter module.
THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.



OVERCURRENT RELEASE AND SWITCH DISCONNECTOR MODULES

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
160A	63A 160A	7T216/OR3
250A	100A 250A	7T225/OR3

- Adjustable overcurrent release
- Adjustable short circuit release

250A	Switch Disconnecter	7T225/SD
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7T225/OR3

250A PANELBOARD WITH DIRECT CONNECTION

	Inc. Terminals only	Outgoing ways	Modular Height	Height (mm)	LIST No
250A		6	12	912	17GG2506DC
		8	13	988	17GG2508DC
		12	15	1140	17GG2512DC
		16	17	1292	17GG2516DC

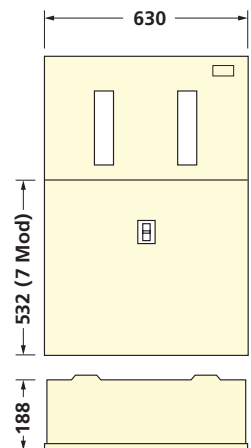
- 250A rated Panelboards
- Busbar 25kA conditional
- IP3X (door closed)
- Incoming terminations: 30mm wide copper bar 1 x M8 connection
- BSEN/IEC 61439-2: 2009



17GG2506DC

DIMENSIONS 250A PANELBOARDS

LIST No	Overall Mod. Height	Height (mm)
17GG2506SW	12	912
17GG2508SW	13	988
17GG2512SW	15	1140
17GG2516SW	17	1292
17GG2506DC	12	912
17GG2508DC	13	988
17GG2512DC	15	1140
17GG2516DC	17	1292





17GG4012SW

400A PANELBOARD WITH TP SWITCHING UNIT

	Outgoing ways	Modular Height	Height (mm)	LIST No
400A	6	14	1064	17GG4006SW
	8	15	1140	17GG4008SW
	12	17	1292	17GG4012SW
	16	19	1444	17GG4016SW

- 400A rated Panelboards
- Busbar fault rated 25kA for 1 sec
- IP3X (door closed)
- Incoming terminations: 32mm wide lug connections*
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release or Switch Disconnecter module.
THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.

* Dependant on the type of cable lug selected, cables up to 300mm² can be connected to these 32mm wide connections



OVERCURRENT RELEASE AND SWITCH DISCONNECTOR MODULES

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
250A	100A 250A	7T325/OR3
400A	160A 400A	7T340/OR3

- Adjustable overcurrent release
- Adjustable short circuit release

400A	Switch Disconnecter	7T363/SD
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7T340/OR3

400A PANELBOARD WITH DIRECT CONNECTION

Incl. Terminals only	Outgoing ways	Modular Height	Height (mm)	LIST No
400A	6	14	1064	17GG4006DC
	8	15	1140	17GG4008DC
	12	17	1292	17GG4012DC
	16	19	1444	17GG4016DC

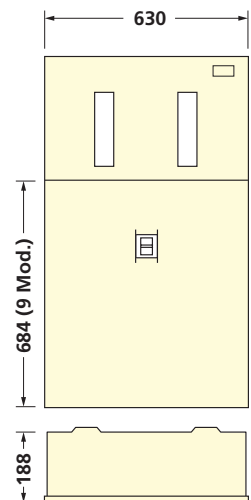
- 400A rated Panelboards
- Busbar fault rated 25kA for 1 sec
- IP3X (door closed)
- Incoming terminations: 30mm wide copper bar 1 x M10 connection
- BSEN/IEC 61439-2: 2009



17GG4012DC

DIMENSIONS 400A PANELBOARDS

LIST No	Overall Mod. Height	Height (mm)
17GG4006SW	14	1064
17GG4008SW	15	1140
17GG4012SW	17	1292
17GG4016SW	19	1444
17GG4006DC	14	1064
17GG4008DC	15	1140
17GG4012DC	17	1292
17GG4016DC	19	1444





17GG125GGMB



17GG250MPKIT



17GG24SS



17GG06DR

ADD-ON MCCB OUTGOING HOUSINGS

	Modular Height	Height (mm)	LIST No
2 off GG MCCB	3	228	17GG125GGMB

- Includes all interconnections
- Busbar fault rated 25kA for 1 sec
- GG Unit accepts SP/TP MCCBs up to 125A
- Fits above 250A/400A Panelboards.
- 630mm wide x 188mm deep

POWERSTAR 125 ADD-ON METER PACKS

An Add-on Assembly, 228mm high, to fit beneath a Panelboard, comprising: Enclosure with slotted front plate and door, Energy Meter with pulsed output, offering Amps, Volts and kWh readout. 3 off 250A/400A Current Transformers, with associated fuses and wiring.

	LIST No
250A	17GG250MPKIT
400A	17GG400MPKIT

SINGLE POLE DISTRIBUTION BOARD

Outgoing 1P ways	Modular Height	Height (mm)	LIST No
19	3	228	17GG19DB

- Supplied with 100A Switch Disconnecter and busbar
- Accepts up to 63A Polestar Compact and Loadstar MCBs
- 630mm wide x 188mm deep

CONTROL MODULE ENCLOSURE

18mm wide modules	Modular Height	Height (mm)	LIST No
24 mod. DIN Rail	3	228	17GG24SS

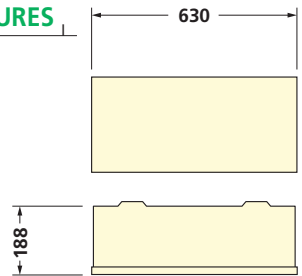
- Accepts DIN rail mounted devices

CABLE SPREADER BOX

	Modular Height	Height (mm)	LIST No
Empty enclosure	3	228	17GGCSB

DIMENSIONS ADD-ON ENCLOSURES

LIST No	Height (mm)	Mod. Height
17GG19DB	228	3
17GG24SS	228	3
17GGCSB	228	3
17GG--0MPKIT	228	3
17GG125GGMB	228	3



POWERSTAR 125 DOOR KITS

Description	LIST No	Panelboard Type
Door kits with catch		
3 module	17GG03DR	Add-on Units
5 module	17GG05DR	Half door - 6 Way
6 module	17GG06DR	Half door - 8 Way
7 module	17GG07DR	Half door - 250A incomer
8 module	17GG08DR	Half door - 12 Way
9 module	17GG09DR	Half door - 400A incomer
10 module	17GG10DR	Half door - 16 Way
12 module	17GG12DR	Full door - 250A 6 Way
13 module	17GG13DR	Full door - 250A 8 Way
14 module	17GG14DR	Full door - 400A 6 Way
15 module	17GG15DR	Full door - 250A 12 Way/400A 8 Way
Door Cylinder lock	16CL	

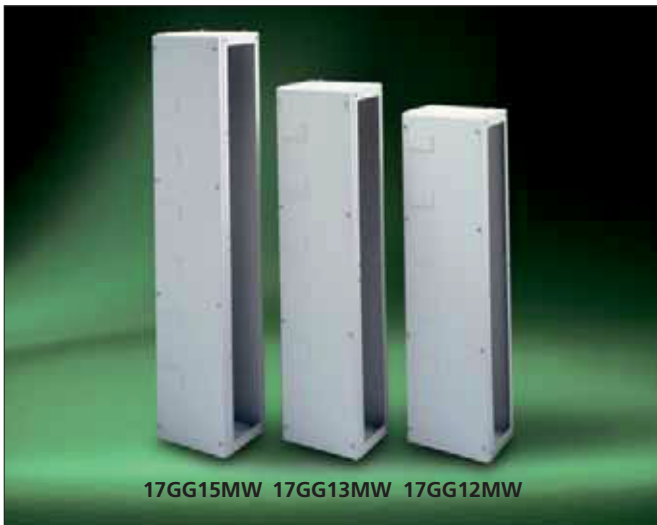

INCOMER INTEGRAL METER PACKS

Rating	Description	LIST No
250A	Integral CT operated Energy meter	17GG250INCTM
400A	Integral CT operated Energy meter	17GG400INCTM

INCOMER INTEGRAL MID METER PACKS

Rating	Description	LIST No
250A	Integral CT operated Energy meter MID	17GG250INCTMID
400A	Integral CT operated Energy meter MID	17GG400INCTMID

- Integral meter packs include a digital energy meter, three current transformers, fuses, wiring loom and mounting bases
- Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature
- MID meters are supplied with a pulsed output as a standard feature


CABLEWAYS

Modular Height	Height (mm)	No. of available meter knockouts	LIST No
3	228	NIL	17GG03MW
12	912	6	17GG12MW
13	988	6	17GG13MW
14	1064	6	17GG14MW
15	1140	6	17GG15MW
17	1292	8	17GG17MW
19	1444	9	17GG19MW

- All cableways accept the outgoing metering options below (not 3 module)
- Cableways may be used with or without metering
- 250mm wide


OUTGOING METER PACKS

Description	LIST No
63A CT operated Energy meter	17GG4WCT63M
125A CT operated Energy meter	17GG4WCT125M

OUTGOING MID METER PACKS

Description	LIST No
125A CT operated Energy meter MID	17GG4WCT125MID

- Energy meters include pulsed output, offering Amps, Volts, kWh readout
- Outgoing meter packs include a digital energy meter, current transformers, terminals, wiring loom and mounting bases

Meter Pack Voltage supply cable loom (only one required per bank of meters) **170UMKCL**

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature

MID meters are supplied with a pulsed output as a standard feature


LIGHTNING & SURGE ARRESTORS (INCOMER ONLY)

Description	LIST No
Combination Lightning & Surge Arrestor kit-type 1/2	17GGCLSA
Lightning Arrestor kit-type 1	17GGLA
Surge Arrestor kit-type 2	17GGSA

- Lightning/Surge Arrestors include: MCCB, cabling and mounting base
- The combination lightning & surge arrestor kit and the lightning arrestor kit will be supplied with a new front cover in addition to the above
- Only one of the above options possible per panelboard
- Kits will utilise the bottom right hand MCCB position



1 Pole MCCB

1 POLE GG FRAME MCCBs

Rating (A)	LIST No
15	7PBGGN115
20	7PBGGN120
25	7PBGGN125
30	7PBGGN130
40	7PBGGN140
50	7PBGGN150
60	7PBGGN160
80	7PBGGN180
100	7PBGGN1100
125	7PBGGN1125

- Standards: IEC/EN 60947-2
- 25kA Icu at 240VAC
- Fixed thermal and magnetic trips
- Terminal Capacity up to 30A - 16mm² above 30A - 50mm²

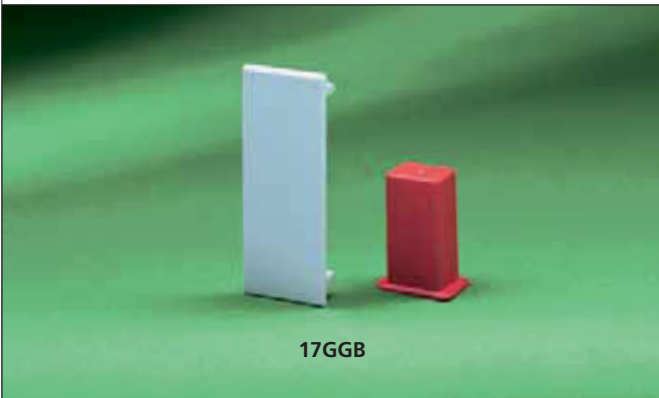


3 Pole MCCB

3 POLE GG FRAME MCCBs

Rating (A)	LIST No
15	7PBGGN315
20	7PBGGN320
25	7PBGGN325
30	7PBGGN330
40	7PBGGN340
50	7PBGGN350
60	7PBGGN360
80	7PBGGN380
100	7PBGGN3100
125	7PBGGN3125

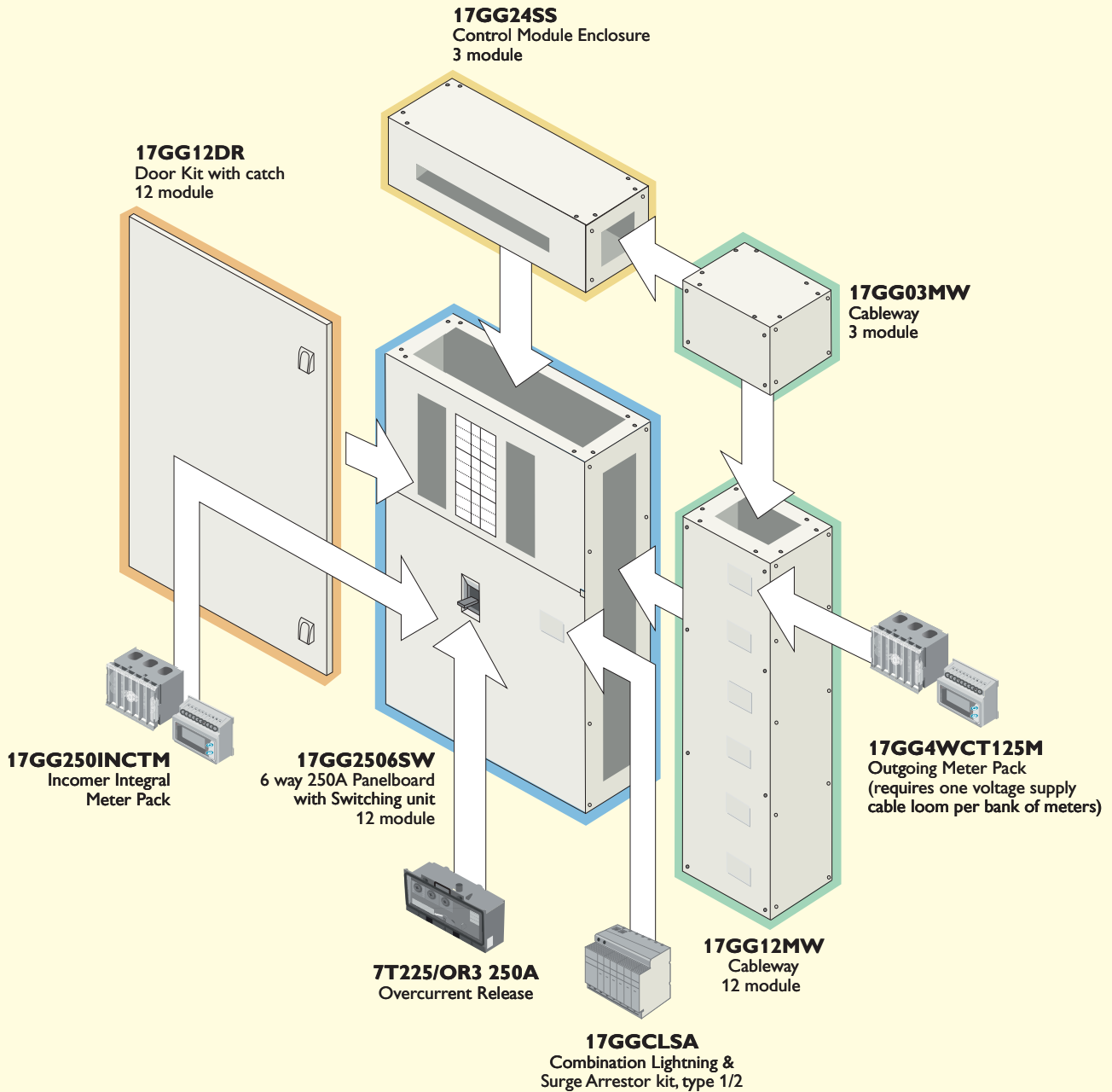
- Standards: IEC/EN 60947-2
- 25kA Icu at 415VAC
- Fixed thermal and magnetic trips
- Terminal Capacity up to 30A - 16mm² above 30A - 50mm²



17GGB

ACCESSORIES

Description	LIST No
GG Frame MCCB SP blanking kit	17GGB
Locking devices	BQDPLD



Modular Height	250A with switching unit	250A direct connection	400A with switching unit	400A direct connection	Door Kits with catch	Cableways	Add-on Boxes
3	-	-	-	-	17GG03DR	17GG03MW	MCCB Housing 17GG125GGMB Incomer Meter Packs 17GG—0MPKIT SP&N Distribution Board 17GG19DB Control Module Enclosure 17GG24SS Cable Spreader Box 17GGCSB
5	-	-	-	-	17GG05DR	-	
6	-	-	-	-	17GG06DR	-	
7	-	-	-	-	17GG07DR	-	
8	-	-	-	-	17GG08DR	-	
9	-	-	-	-	17GG09DR	-	
10	-	-	-	-	17GG10DR	-	
12	17GG2506SW	17GG2506DC	-	-	17GG12DR	17GG12MW	
13	17GG2508SW	17GG2508DC	-	-	17GG13DR	17GG13MW	
14	-	-	17GG4006SW	17GG4006DC	17GG14DR	17GG14MW	
15	17GG2512SW	17GG2512DC	17GG4008SW	17GG4008DC	17GG15DR	17GG15MW	
17	17GG2516SW	17GG2516DC	17GG4012SW	17GG4012DC	-	17GG17MW	
19	-	-	17GG4016SW	17GG4016DC	-	17GG19MW	

An appropriate overcurrent release or switch disconnector module must be selected for Panelboards which include switching units (suffixed SW)
 Overall Panelboard doors are available up to 15 mod. Two doors can be used for larger units. (250A incoming section = 7 mod. 400A incoming section = 9 mod.)
 Each bank of outgoing meter packs to be installed in conjunction with a voltage supply cable loom (17OUMKCL)
 Product list numbers and descriptions can be found within the body of the catalogue



POWERSTAR 250

- 400A and 630A Panelboards
- Designed and Manufactured in the UK to BSEN/IEC 61439-2: 2009
- Fully RoHS compliant
- Form 3b Type 2
- Supplied with Incoming Switching unit
- User defined Incomer function (MCCB/Switch Disconnecter)
- Main Units are available with 2, 4 or 6 outgoing ways suitable for 250A TP MCCBs
 - 8 way Add-on Unit for 250A outgoing MCCBs
 - 4, 8 or 12 way Add-on units for SP and TP 125A outgoing MCCBs
 - A choice of standard or metering cableways available
 - Over-voltage protection option

Devices

- Utilising Siemens technology
- 250A TP 36kA and 65kA rated MCCBs (T2 frame size)
- 125A SP and TP 25kA rated MCCBs (GG frame size)
- IEC/EN60947-2




400A PANELBOARD WITH TP SWITCHING UNIT

	Outgoing TP ways	Height (mm)	LIST No
400A	2	1055	173T2402
	4	1160	173T2404
	6	1265	173T2406

- 400A rated Panelboards
- 900mm wide x 250mm deep (including door)
- Busbar fault rated 35kA for 1 sec
- 250A outgoing TP MCCBs (T2 frame size)
- IP3X (door closed)
- Incoming connections
 - Incomer: 32mm wide lug connections*
 - Neutral: 30 x 6mm copper bar 1 x M8 connection
 - Earth: 25 x 5mm copper bar 1 x M12 connection
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release or Switch Disconnecter module.
THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.


400A PANELBOARD WITH 4P SWITCHING UNIT

	Outgoing TP ways	Height (mm)	LIST No
400A	2	1055	174T2402
	4	1160	174T2404
	6	1265	174T2406

- 400A rated Panelboards
- 900mm wide x 250mm deep (including door)
- Busbar fault rated 35kA for 1 sec
- 250A outgoing TP MCCBs (T2 frame size)
- IP3X (door closed)
- Incoming connections
 - Incomer: 32mm wide lug connections*
 - Neutral: 30 x 6mm copper bar 1 x M8 connection
 - Earth: 25 x 5mm copper bar 1 x M12 connection
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release.

THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.
* Dependant on the type of cable lug selected, cables up to 300mm² can be connected to these 32mm wide connections


OVERCURRENT RELEASE AND SWITCH DISCONNECTOR MODULES FOR TP SWITCHING UNIT

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
250A	100A 250A	7T325/OR3
400A	160A 400A	7T340/OR3

- Adjustable overcurrent release
- Adjustable short circuit release

400A	Switch Disconnecter	7T363/SD
-------------	---------------------	-----------------

OVERCURRENT RELEASE MODULES FOR 4P SWITCHING UNIT

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
250A	100A 250A	7T325/OR4
400A	160A 400A	7T340/OR4

- Adjustable overcurrent release
- Adjustable short circuit release
- Protected neutral function


INCOMER INTEGRAL METER PACKS

Rating	Description	LIST No
400A	Integral 3 Ph CT operated Energy meter	17INMK400CT
400A	Integral 3 Ph CT operated Energy meter MID	17INMK400MCT

- Integral meter packs include a digital energy meter, current transformers, fuses, wiring loom and mounting base plates

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature

MID meters are supplied with a pulsed output as a standard feature



173T2634

630A PANELBOARD WITH TP SWITCHING UNIT

	Outgoing TP ways	Height (mm)	LIST No
630A	2	1055	173T2632
	4	1160	173T2634
	6	1265	173T2636

- 630A rated Panelboards
- 900mm wide x 250mm deep (including door)
- Busbar fault rated 50kA for 1 sec
- 250A outgoing TP MCCBs (T2 frame size)
- IP3X (door closed)
- Incoming connections
 - Incomer: 32mm wide lug connections*
 - Neutral: 30 x 6mm copper bar 1 x M8 connection
 - Earth: 25 x 5mm copper bar 1 x M12 connection
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release or Switch Disconnecter module.
THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.



174T2634

630A PANELBOARD WITH 4P SWITCHING UNIT

	Outgoing TP ways	Height (mm)	LIST No
630A	2	1055	174T2632
	4	1160	174T2634
	6	1265	174T2636

- 630A rated Panelboards
- 900mm wide x 250mm deep (including door)
- Busbar fault rated 50kA for 1 sec
- 250A outgoing TP MCCBs (T2 frame size)
- IP3X (door closed)
- Incoming connections
 - Incomer: 32mm wide lug connections*
 - Neutral: 30 x 6mm copper bar 1 x M8 connection
 - Earth: 25 x 5mm copper bar 1 x M12 connection
- BSEN/IEC 61439-2: 2009

Designation of the incoming device is defined by the selection of an overcurrent release.
THE SWITCHING UNIT MUST BE FITTED WITH ONE OF THESE MODULES.

* Dependant on the type of cable lug selected, cables up to 300mm² can be connected to these 32mm wide connections



7T363/OR4

OVERCURRENT RELEASE AND SWITCH DISCONNECTOR MODULES FOR TP SWITCHING UNIT

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
400A	160A 400A	7T340/OR3
630A	250A 630A	7T363/OR3

- Adjustable overcurrent release
- Adjustable short circuit release

630A	Switch Disconnecter	7T363/SD
-------------	---------------------	-----------------

OVERCURRENT RELEASE MODULES FOR 4P SWITCHING UNIT

Rated Current (In)	Overcurrent adjustment (0.4 to 1xIn)	LIST No
400A	160A 400A	7T340/OR4
630A	250A 630A	7T363/OR4

- Adjustable overcurrent release
- Adjustable short circuit release
- Protected neutral function



17INMR630CT

INCOMER INTEGRAL METER PACKS

Rating	Description	LIST No
630A	Integral 3 Ph CT operated Energy meter	17INMK630CT
630A	Integral 3 Ph CT operated Energy meter MID	17INMK630MCT

- Integral meter packs include a digital energy meter, current transformers, fuses, wiring loom and mounting base plates

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature

MID meters are supplied with a pulsed output as a standard feature



17GG408A

ADD ON UNITS GG FRAME

Amps (A)	Outgoing ways	Height (mm)	LIST No
400	4	267	17GG404A
400	8	425	17GG408A
400	12	583	17GG4012A

- To be used in conjunction with the 400A rated Panelboards only
- Busbar fault rated 25kA for 1 sec
- Accepts GG range of MCCBs (15A - 125A) SP & TP
- 900mm wide x 250mm deep (including door)

Amps (A)	Outgoing ways	Height (mm)	LIST No
630	4	267	17GG634A
630	8	425	17GG638A
630	12	583	17GG6312A

- To be used in conjunction with the 630A rated Panelboards only
- Busbar fault rated 25kA for 1 sec
- Accepts GG range of MCCBs (15A - 125A) SP & TP
- 900mm wide x 250mm deep (including door)



17T2408A

ADD ON UNITS T2 FRAME

Amps (A)	Outgoing ways	Height (mm)	LIST No
400	8	583	17T2408A
630	8	583	17T2638A

- 400A - 35kA Busbar fault rating. To be used in conjunction with the 400A rated Panelboards only
- 630A - 50kA Busbar fault rating. To be used in conjunction with the 630A rated Panelboards only
- Accepts T2 range of MCCBs to 250A TP only
- 900mm wide x 250mm deep (including door)



16CL

DOOR LOCKING DEVICE

Description	LIST No
Door Cylinder Lock	16CL



17SAR2

LIGHTNING & SURGE ARRESTORS (INCOMER ONLY)

Description	LIST No
Combination Lightning & Surge Arrestor kit-type 1/2	17CSAR1/2
Lightning Arrestor kit-type 1	17LAR1
Surge Arrestor kit-type 2	17SAR2

- Lightning/Surge Arrestors include: MCCB, cabling and mounting base
- The combination lightning & surge arrestor kit and the lightning arrestor kit will be supplied with a new front cover in addition to the above
- Only one of the above options possible per panelboard
- Kits will utilise the bottom left hand MCCB position



17T26CW 17T24CW 17T22CW

CABLEWAYS-MAIN UNIT

Description	LIST No
2 way standard	17T22CW
4 way standard	17T24CW
6 way standard	17T26CW
2 way metering	17T22CWM
4 way metering	17T24CWM
6 way metering	17T26CWM

- Standard cableway width 250mm
- Metering cableway width 400mm



17GG12CWA 17GG8CWA 17GG4CWA

CABLEWAYS-ADD ON

Description	LIST No
4 way standard GG	17GG4CWA
8 way standard GG	17GG8CWA
12 way standard GG	17GG12CWA
4 way metering GG	17GG4CWMA
8 way metering GG	17GG8CWMA
12 way metering GG/8 way metering T2	17GG12CWMA
8 way standard T2	17T28CWA

- Standard cableway width 250mm
- Metering cableway width 400mm



17OUMK160CT

OUTGOING METERING-MAIN UNIT & ADD ON T2

Description	LIST No
Three phase Energy meter 160/5 CTs	17OUMK160CT
Three phase Energy meter 250/5 CTs	17OUMK250CT
Three phase Energy meter 160/5 CTs MID	17OUMK160MCT
Three phase Energy meter 250/5 CTs MID	17OUMK250MCT
Meter Pack Voltage supply cable loom (only one required per bank of meters)	17OUMKCL

- To be used in conjunction with a metering cableway
- Energy meters are suitable for a 3P 4 wire system

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature

MID meters are supplied with a pulsed output as a standard feature



17OUMK125CT

OUTGOING METERING PACK-ADD ON GG

Description	LIST No
Three phase Energy meter 63/5 CTs	17OUMK63CT
Three phase Energy meter 125/5 CTs	17OUMK125CT
Three phase Energy meter 125/5 CTs MID	17OUMK125MCT
Meter Pack Voltage supply cable loom (only one required per bank of meters)	17OUMKCL

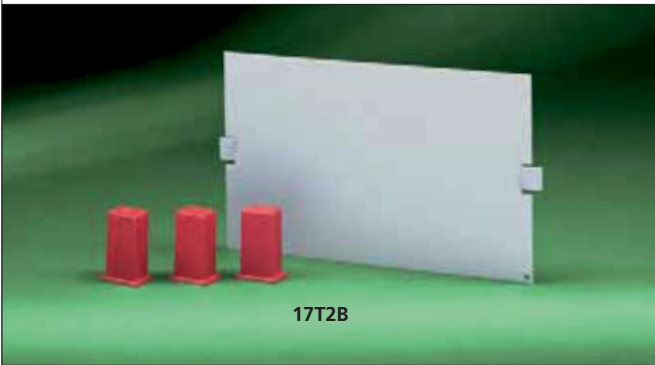
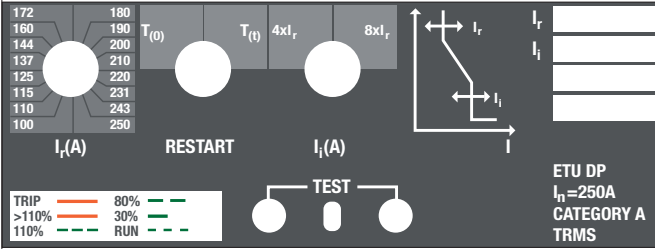
- To be used in conjunction with a metering cableway
- Energy meters are suitable for a 3P 4 wire system

Non MID meters include MODBUS (RTU) connections and pulsed output as a standard feature

MID meters are supplied with a pulsed output as a standard feature



7T2S3250 + OR



17T2B



1 Pole MCCB



3 Pole MCCB

MAIN UNIT MCCBs- 40A TO 250A

Description	LIST No
250A 36kA Switching Unit	7T2S3250
250A 65kA Switching Unit	7T2H3250

- Standards: IEC/EN 60947-2
- Terminal Capacity 120mm²

TRIP UNIT OVERLOAD SETTINGS

Rated Current I _n :	100A	7T210/OR3
Overload protection I _r :	40, 43, 46, 48, 50, 55, 58, 61, 63, 69, 72, 76, 80, 87, 91 and 100A	
Rated Current I _n :	160A	7T216/OR3
Overload protection I _r :	63, 69, 72, 80, 87, 91, 100, 110, 115, 120, 125, 130, 137, 144, 150 and 160A	
Rated Current I _n :	250A	7T225/OR3
Overload protection I _r :	100, 110, 115, 125, 137, 144, 160, 172, 180, 190, 200, 210, 220, 231, 243 and 250A	

Restart: T₍₀₎, T_(t)
 Instantaneous short circuit protection: I_i = 4 x I_r, I_i = 8 x I_r
 The rating of these MCCBs is defined by selection of the appropriate overcurrent release.
 THE SWITCHING UNIT MUST BE FITTED WITH AN OVERCURRENT RELEASE MODULE.

ANCIILLIARIES

Description	LIST No	UVR 230V AC or DC	UVR 230V AC or DC
3P Terminal Shields	7T3A3TS	7T3AUV/230	
4P Terminal Shields	7T3A4TS	Padlock kit outgoing	7T2ALD
Auxilliary	7T3ACO	Padlock kit incoming	7T3ALD
UVR 110V AC or DC	7T3AUV/110		
Shunt Trip 24V/48V AC or DC	7T3AST/48	Shunt Trip 230V AC or DC	7T3AST/230

BLANKING PLATES

Description	LIST No
T2 frame MCCB TP blanking kit	17T2B

1 POLE GG FRAME MCCBs

Rating (A)	LIST No	Rating (A)	LIST No
15	7PBGGN115	50	7PBGGN150
20	7PBGGN120	60	7PBGGN160
25	7PBGGN125	80	7PBGGN180
30	7PBGGN130	100	7PBGGN1100
40	7PBGGN140	125	7PBGGN1125

- Standards: IEC/EN 60947-2
- 25kA Icu at 240VAC
- Fixed thermal and magnetic trips
- Terminal Capacity up to 30A - 16mm² above 30A - 50mm²

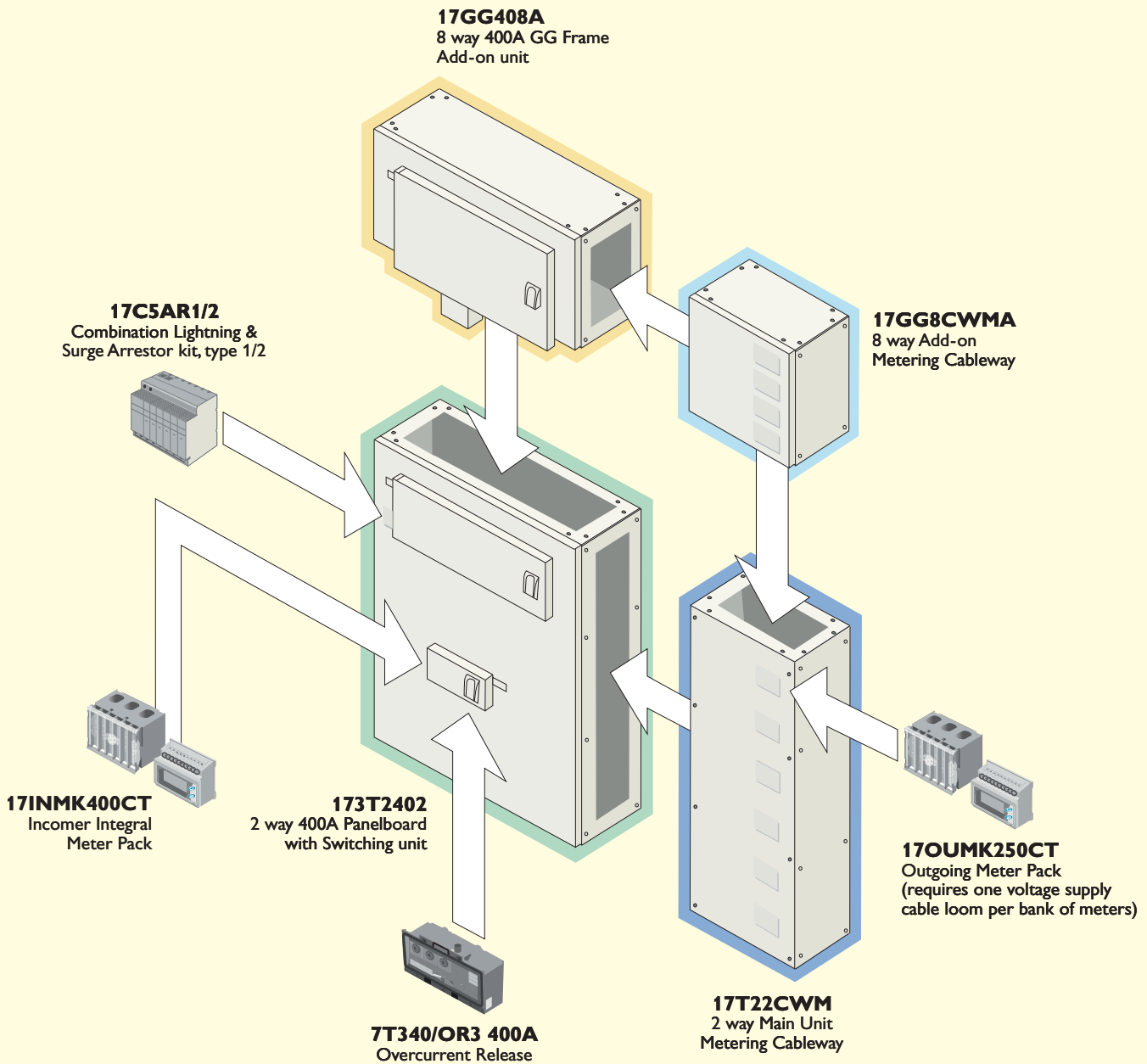
3 POLE GG FRAME MCCBs

Rating (A)	LIST No	Rating (A)	LIST No
15	7PBGGN315	50	7PBGGN350
20	7PBGGN320	60	7PBGGN360
25	7PBGGN325	80	7PBGGN380
30	7PBGGN330	100	7PBGGN3100
40	7PBGGN340	125	7PBGGN3125

- Standards: IEC/EN 60947-2
- 25kA Icu at 415VAC
- Fixed thermal and magnetic trips
- Terminal Capacity up to 30A - 16mm² above 30A - 50mm²

BLANKING PLATES

Description	LIST No
GG Frame MCCB SP blanking kit	17GGB



400A 3P with switching unit	400A 4P with switching unit	630A 3P with switching unit	630A 4P with switching unit	Main Unit Standard Cableways	Main Unit Metering Cableways	Add-on units	Add-on Standard Cableways	Add-on Metering Cableways
173T2402	-	-	-	17T22CW	17T22CWM	T2 frame 17T2408A GG frame 17GG404A 17GG408A 17GG4012A	17T28CWA	17GG12CWM
173T2404	-	-	-	17T24CW	17T24CWM			
173T2406	-	-	-	17T26CW	17T26CWM			
-	174T2402	-	-	17T22CW	17T22CWM			
-	174T2404	-	-	17T24CW	17T24CWM			
-	174T2406	-	-	17T26CW	17T26CWM			
-	-	173T2632	-	17T22CW	17T22CWM	T2 frame 17T2638A GG frame 17GG634A 17GG638A 17GG6312A	17T28CWA	17GG12CWM
-	-	173T2634	-	17T24CW	17T24CWM			
-	-	173T2636	-	17T26CW	17T26CWM			
-	-	-	174T2632	17T22CW	17T22CWM			
-	-	-	174T2634	17T24CW	17T24CWM			
-	-	-	174T2636	17T26CW	17T26CWM			

An appropriate overcurrent release or switch disconnector module must be selected for Powerstar 250 Panelboards
 Each bank of outgoing main or add on unit meter packs must be installed in conjunction with a voltage supply cable loom (17OUMKCL)
 Product list numbers and descriptions can be found within the body of the catalogue



WARWICK

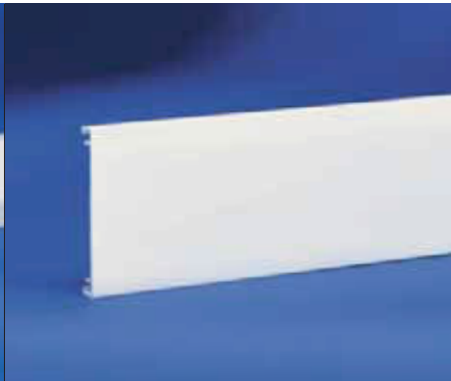
PVC modular trunking range which can be mounted at either Dado or Skirting level, available in 2 different sizes (50mm x 170mm) or (50mm x 212mm).

QUICK GUIDE TO FIVE PVC PROFILES

	WARWICK 1 Ref No	WARWICK 2 Ref No	WARWICK 3 Ref No	WARWICK 4 Ref No	WARWICK 5 Ref No
Trunking Pack	BCL1	BCL2	BCL3	BCL4	BCL5
Internal Bend	BCL1/IB	BCL2/IB	BCL3/IB	BCL4/IB	BCL5/IB
External Bend	BCL1/EB	BCL2/EB	BCL3/EB	BCL4/EB	BCL5/EB
Flat Angle 90° (Downward)	BCL1/FAD	BCL2/FAD	BCL3/FAD	BCL4/FAD	BCL5/FAD
Flat Angle 90° (Upward)	-	BCL2/FAU	-	BCL4/FAU	BCL5/FAU
Flat Tee (Downward)	BCL1/FTD	BCL2/FTD	BCL3/FTD	BCL4/FTD	BCL5/FTD
Flat Tee (Upward)	-	BCL2/FTU	-	BCL4/FTU	BCL5/FTU
Stop End - Left	BCL1/SEL	BCL2/SEL	BCL3/SEL	BCL4/SEL	BCL5/SEL
Stop End - Right	-	BCL2/SER	-	BCL4/SER	BCL5/SER
Coupler Pack	BCL1/CP	BCL2/CP	BCL3/CP	BCL4/CP	BCL5/CP
Standard Cable Retainer	BCL/SCR	BCL/SCR	BCL/SCR	BCL/SCR	BCL/SCR
Square Cable Retainer	-	BCL/SQCR	BCL/SQCR	BCL/SQCR	BCL/SQCR
Single Gang Accessory Box - 30mm deep	BCL/SGB	BCL/SGB	BCL/SGB	BCL/SGB	BCL/SGB
Twin Gang Accessory Box - 30mm deep	BCL/TGB	BCL/TGB	BCL/TGB	BCL/TGB	BCL/TGB


ANGLED COVER SECTION

Pack Quantity 5 x 3m

BCL/ACS

MAIN COVER

Pack Quantity 5 x 3m

BCL/MC

SQUARE COVER SECTION

Pack Quantity 5 x 3m

BCL/SCS

BASE EXTENSION

Pack Quantity 5 x 3m

BCL/BE

VERTICAL MOUNT ADAPTOR PLATE

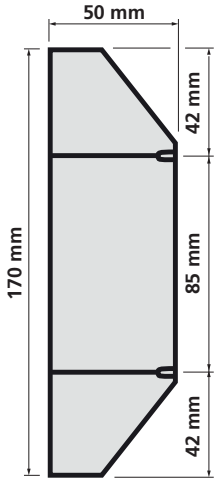
Pack Quantity 1

BCL/ADPL

RCD HOUSING

 Pack Quantity 1
(RCD not Included)

BCL/RCD



Profile assembly includes:

- Base Section
- 2 x Angled Covers
- 1 x Main Cover

Overall Size: • 170mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL1



INTERNAL BEND
Pack Quantity 1

BCL1/IB



EXTERNAL BEND
Pack Quantity 1

BCL1/EB



FLAT ANGLE
Pack Quantity 1

BCL1/FAD



FLAT TEE
Pack Quantity 1

BCL1/FTD



STOP END
Pack Quantity 1

BCL1/SEL



COUPLER PACK
Pack Quantity 1

BCL1/CP



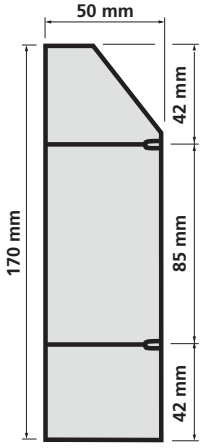
SINGLE GANG ACCESSORY BOX
Pack Quantity 10
30mm deep

BCL/SGB



TWIN GANG ACCESSORY BOX
Pack Quantity 5
30mm deep

BCL/TGB



- Profile assembly includes:
- Base Section
 - 1 x Angled Cover
 - 1 x Main Cover
 - 1 x Square Cover
- Overall Size: • 170mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL2



INTERNAL BEND
Pack Quantity 1 **BCL2/IB**

EXTERNAL BEND
Pack Quantity 1 **BCL2/EB**

FLAT ANGLE (DOWNWARD)
Pack Quantity 1 **BCL2/FAD**



FLAT ANGLE (UPWARD)
Pack Quantity 1 **BCL2/FAU**

FLAT TEE (UPWARD)
Pack Quantity 1 **BCL2/FTU**

FLAT TEE (DOWNWARD)
Pack Quantity 1 **BCL2/FTD**



STOP END (LEFT)
Pack Quantity 1 **BCL2/SEL**

STOP END (RIGHT)
Pack Quantity 1 **BCL2/SER**

COUPLER PACK
Pack Quantity 1 **BCL2/CP**



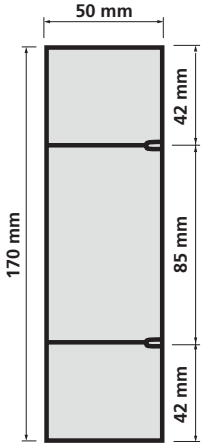
SQUARE CABLE RETAINER
Pack Quantity 10 **BCL/SQCR**



SINGLE GANG ACCESSORY BOX
Pack Quantity 10 **BCL/SGB**



TWIN GANG ACCESSORY BOX
Pack Quantity 5 **BCL/TGB**



Profile assembly includes:

- Base Section
- 2 x Square Covers
- 1 x Main Cover

Overall Size: • 170mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL3



INTERNAL BEND
Pack Quantity

BCL3/IB



EXTERNAL BEND
Pack Quantity 1

BCL3/EB



FLAT ANGLE
Pack Quantity 1

BCL3/FAD



FLAT TEE
Pack Quantity 1

BCL3/FTD



STOP END
Pack Quantity 1

BCL3/SEL



COUPLER PACK
Pack Quantity 1

BCL3/CP



SQUARE CABLE RETAINER
Pack Quantity 10

BCL/SQCR



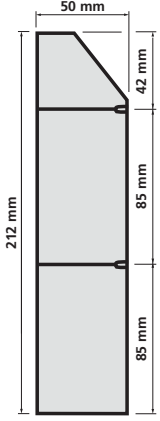
SINGLE GANG ACCESSORY BOX
Pack Quantity 10

BCL/SGB



TWIN GANG ACCESSORY BOX
Pack Quantity 5

BCL/TGB



- Profile assembly includes:
- Base Section
 - 1 x Base Extension
 - 1 x Angled Cover
 - 2 x Main Covers
- Overall Size: • 212mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL4



INTERNAL BEND
Pack Quantity 1 **BCL4/IB**

EXTERNAL BEND
Pack Quantity 1 **BCL4/EB**

FLAT ANGLE (DOWNWARD)
Pack Quantity 1 **BCL4/FAD**



FLAT ANGLE (UPWARD)
Pack Quantity 1 **BCL4/FAU**

FLAT TEE (DOWNWARD)
Pack Quantity 1 **BCL4/FTD**

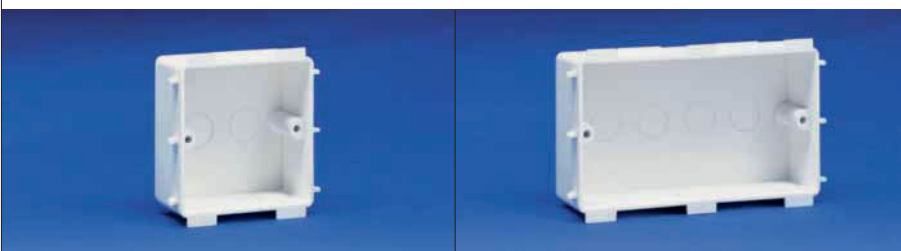
FLAT TEE (UPWARD)
Pack Quantity 1 **BCL4/FTU**



STOP END (LEFT)
Pack Quantity 1 **BCL4/SEL**

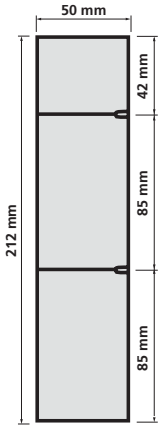
STOP END (RIGHT)
Pack Quantity 1 **BCL4/SER**

COUPLER PACK
Pack Quantity 1 **BCL4/CP**



SINGLE GANG ACCESSORY BOX
Pack Quantity 10 **BCL/SGB**

TWIN GANG ACCESSORY BOX
Pack Quantity 5 **BCL/TGB**



- Profile assembly includes:
- Base Section
 - 1 x Base Extension
 - 1 x Square Cover
 - 2 x Main Covers
- Overall Size: • 212mm x 50mm



TRUNKING PACK
Pack Quantity 1 x 3m lengths

BCL5



INTERNAL BEND
Pack Quantity 1

BCL5/IB

EXTERNAL BEND
Pack Quantity 1

BCL5/EB

FLAT ANGLE (DOWNWARD)
Pack Quantity 1

BCL5/FAD



FLAT ANGLE (UPWARD)
Pack Quantity 1

BCL5/FAU

FLAT TEE (DOWNWARD)
Pack Quantity 1

BCL5/FTD

FLAT TEE (UPWARD)
Pack Quantity 1

BCL5/FTU



STOP END (LEFT)
Pack Quantity 1

BCL5/SEL

STOP END (RIGHT)
Pack Quantity 1

BCL5/SER

COUPLER PACK
Pack Quantity 1

BCL5/CP



SQUARE CABLE RETAINER
Pack Quantity 10

BCL/SQCR

SINGLE GANG ACCESSORY BOX
30mm Deep Pack Quantity 10

BCL/SGB

TWIN GANG ACCESSORY BOX
30mm Deep Pack Quantity 5

BCL/TGB

FLOOR BOX DISTRIBUTION

The Britmac range of cable management products have been utilised in the design and installation of electrical systems in commercial and industrial projects for many years. The comprehensive fast-fit floor box provides a wide choice from which to select the most appropriate for a specific application. Units can be supplied fitted with accessories pre-wired to customers' requirements and fully factory tested in the UK prior to delivery. The products are supported by a nationwide team of Sales Engineers and Stockists.





- Large capacity cable routing guides ensure cables exit the box safely and neatly
- Lid hinge design ensures that lid will always self-close
- Snap-out facility enables the lid to be removed for access to accessory plates
 - Pre-wired saving time during site installation





GR03G

3 COMPARTMENT FLOOR BOX & ACCESSORIES

TRIM COLOUR	LIST No
Grey	GR03G

- The most popular size of raised access floor box for use in commercial office applications where power, voice and data services are required.
- Utilises 87mm wide accessory plates.

For Floor Box Dimensions See page 53.



GB3SRCD30/BG GB3SSN2/BG

SWITCHED 13A SOCKETS

	LIST No
13A 2 Gang switched socket TWIN EARTH	GB3SS2/BG
13A 2 Gang switched socket CLEAN EARTH	GB3SS2CE/BG
13A 2 Gang switched socket NON-STD TWIN EARTH	GB3SSN2/BG
13A 2 Gang switched socket NON-STD CLEAN EARTH	GB3SSN2CE/BG
13A 2 Gang switched safety socket 30mA	GB3SRCD30/BG

- Clean Earth has a normal and an isolated earth.



GB3S2/BG GB3SN2/BG

UNSWITCHED 13A SOCKETS

	LIST No
13A 2 Gang unswitched socket TWIN EARTH	GB3S2/BG
13A 2 Gang unswitched socket CLEAN EARTH	GB3S2CE/BG
13A 2 Gang unswitched socket NON-STD	GB3SN2/BG

- Clean Earth has a normal and an isolated earth.



GB3J6C/6BG GB32G/BG GB3J3/BG

DATA AND COMMUNICATIONS

	LIST No
Accessory plate 4 knockout LJU6C/RJ45	GB3J6C/BG
Accessory plate to accept 6x LJU6C/RJ45	GB3J6C/6BG
Accessory plate to accept 2x 1G standard accessory	GB3J3/BG
Accessory plate to accept 2G standard accessory	GB32G/BG
Blank plate	GB3BP/BG
Accessory plate to accept 4x Alpha	GB3ALPHA/BG
Accessory plate to accept 2x Euro module (Will accept 4x Crabtree communication modules 25mm x 50mm).	GB3EURO/BG

- All plates 87mm x 173mm.
- All accessory plates are supplied with fixing screws.



GB3ALPHA/BG GB3EURO/BG



GR04G

4 COMPARTMENT FLOOR BOX & ACCESORIES

TRIM COLOUR	LIST No
Grey	GR04G

- Compact 4 compartment unit - utilises 66mm wide accessories.
- 4 compartment units can provide an attractive and economical solution for applications, where power, voice and data systems are to be accessed, particularly where both clean and utility power outlets are required or where more than one type of data system is required.

For Floor Box Dimensions See pages 53.



GBSS2/BG GBSSN2/BG

SWITCHED 13A SOCKETS

	LIST No
13A 2 Gang switched socket TWIN EARTH	GBSS2/BG
13A 2 Gang switched socket CLEAN EARTH	GBSS2CE/BG
13A 2 Gang switched socket NON-STD TWIN EARTH	GBSSN2/BG
13A 2 Gang switched socket NON-STD CLEAN EARTH	GBSSN2CE/BG

- Power sockets supplied with rear entry terminals as standard.
- Clean earth have a normal and an isolated earth.
- Only two 13A 2 gang Sockets can be fitted per Floor Box, in centre compartment only.



GBJ6C/BG GBBP/BG

DATA AND COMMUNICATIONS

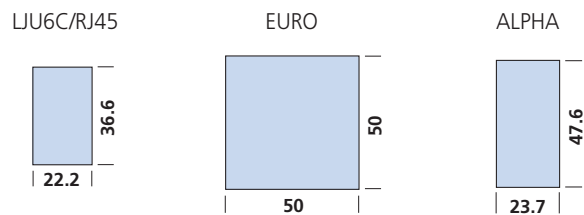
	LIST No
Plate to accept 4 LJU6C voice or 4 RJ45 data outlets	GBJ6C/BG
Blank plate for on-site piercing	GBBP/BG
Plate to accept 4x Alpha	GBALPHA/BG
Plate to accept 2x Euro modules (Will accept 4x Crabtree communication modules 25mm x 50mm).	GBEURO/BG

- All plates 66mm x 173mm.
 - All accessory plates are supplied with fixing screws.
- 13A accessory plates are supplied with the appropriate interior fitted.*



GBEURO/BG GBALPHA/BG

KNOCKOUT DIMENSIONS





200013GY



98950-1/A/2



98347-1/A/2



98351-1/H/1



98496-2/E/1

CURRENT RANGE

GROSVENOR LID REPLACEMENT 3 & 4 GANG

Lid assembly, Grey	200013GY
--------------------	-----------------

GROSVENOR SPARES

Trim piece (plain), Grey	98950-1/A/2
--------------------------	--------------------

Trim piece (handle), Grey - Complete	98347-1/A/2
--------------------------------------	--------------------

Cable flap, Grey	98351-1/H/1
------------------	--------------------

Cable retainer, Black	98496-2/E/1
-----------------------	--------------------



FLOOR GROMMET

In the modern office environment where flexibility is vital, the BRITACCESS floor grommet can accommodate most requirements for accessing cables on flexible conduits up to cable managed desks etc.

If the requirement is for a basic access point the top element will satisfy that need. To allow a desk module to pass through from a floor void whether it be a 3 core flexible cable or a flexible conduit, the BRITACCESS grommet is suitable for the job.

FLOOR ACCESS GROMMET

Top Grommet Only	BAG150
Floor Grommet c/w Switched 1G Socket & Back box	BAGSS



BRITMAC FLOOR DISTRIBUTION SYSTEMS

Materials

All systems are constructed from high quality materials and are designed to meet relevant British and International Standards including the installation requirements of the IEE Wiring Regulations.

Raised Access Floors

Throughout this catalogue the term Raised Access Floor has been used to describe any modular flooring system which is supported on adjustable pedestals providing a service void. Other names frequently used are Cavity Floor, False Floor, Platform Floor, Access Floor, Computer Floor, etc.

GROSVENOR RAISED ACCESS FLOOR BOXES

Floorboxes

The Grosvenor floorbox has been designed to withstand working loads of the PSA MOB PF2 PS/SPU specification for raised floors.

The floorboxes listed within this catalogue are capable of accepting a very wide range of accessories fitted in any compartment. However, certain combinations do impose restrictions on positioning, due to the clashes of connectors, plug tops or the cables themselves.

Accessories

All accessory plates are supplied complete with the appropriate thread cutting screws. Each fixing hole in the unit frames is unthreaded and deep plunged for ease of location of fixing.

The minimum plug clearance between accessory plate and underside of floor is 34mm.

POWER (13A)

- Twin Earth sockets.
- Non-standard sockets.
- Clean Earth sockets.

TELEPHONE

Components for most British Telecom, Mercury and other national and international systems.

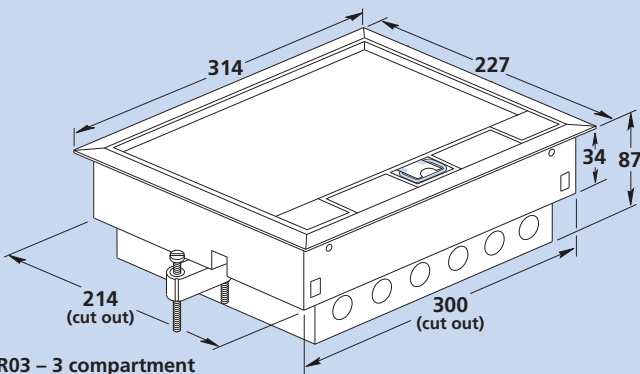
DATA

A wide range of components to suit virtually all systems in current use. These include IBM, Wang, Phillips, ICL and many others.

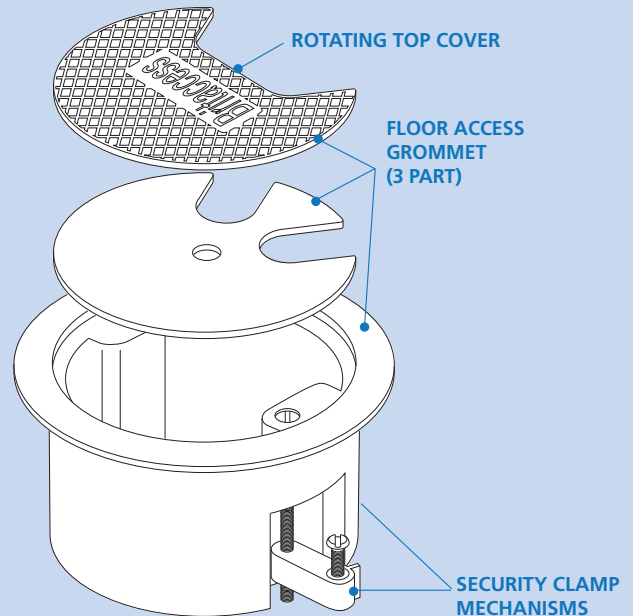
All dimensions in mm Tolerance on cut-out dimensions is ±1mm

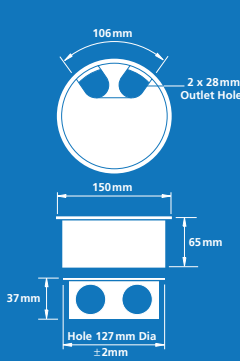


GROSVENOR 'FAST FIT' RAISED ACCESS FLOOR BOXES



**GR03 – 3 compartment
GR04 – 4 compartment**





SPECIFICATION
Top Element (Grommet Only)

Dimensions:

O/A Diameter 150mm

Internal Diameter 120mm

Depth 65mm

Material: High Impact ABS

Colour: RAL 7016



Crabtree
FUSESTAR

315A

Crabtree
FUSESTAR

250A

Crabtree
FUSESTAR

15A

Crabtree
FUSESTAR



SWITCH DISCONNECTORS AND FUSE SWITCHES

Fuse Switch Range

- 20A to 800A
- SP & N TP & N and 4 P
- Modular Range of Enclosures with built in Cable spreading room
- Removable door, opens through 180° for all round access

- Neutrals, fully rated
- Includes HRC fuses, up to 125A rating
- BS EN 60947 - 3
- Paint finish Epoxy Powder, Light Grey RAL 7035

Switch Disconnecter Range

- 20A to 125A
- SP & N TP & N and 4 P
- Metal Enclosures with hinged door, IP4X
- Insulated Enclosures, IP65


20/32

63/100

125/160/200

315/400
FUSE COMBINATION UNIT 20A–32A

20A	SP&N TP&N 4P	supplied with 20A fuses	190201NF 190203NF 190204F
32A	SP&N TP&N 4P	supplied with 32A fuses	190321NF 190323NF* 190324F
Accessories	Cable Spreader Box Copper Isolator Link Each		19032CSB 19LK32
Modular width			4
Terminals	20A–32A	16mm ² Max	Cable Clamp
Spreading room		up to 10mm ² 4 Core *	

FUSE COMBINATION UNIT 63A–100A

63A	SP&N TP&N 4P	supplied with 63A fuses	190631NF 190633NF* 190634F
100A	SP&N TP&N 4P	supplied with 100A fuses	191001NF 191003NF* 191004F
Accessories	Cable Spreader Box Copper Isolator Link Each 63A Copper Isolator Link Each 100A Castell Lock (factory fitted)		19100CSB 19LK63 19LK200 Suffix CLK
Modular width			5
Terminals	63A–100A	63A-Cable Clamp 25mm ² 100A- M8 Hole	
Spreading room		up to 70mm ² 4 Core *	
Cable lug palm copper size		20mm wide Maximum	

FUSE COMBINATION UNIT 125A–200A

125A	SP&N TP&N 4P	supplied with 125A fuses	191251NF 191253NF 191254F
160A	SP&N TP&N 4P	no fuses supplied	191601N 191603N* 191604
200A	SP&N TP&N 4P	no fuses supplied	192001N 192003N 192004
Accessories	Cable Spreader Box Copper Isolator Link Each Castell Lock (factory fitted)		19200CSB 19LK200 Suffix CLK
Modular width			6
Terminals	125A–200A		M8
Spreading room		up to 150mm ² 4 Core *	
Cable lug palm copper size		20mm wide Maximum	

FUSE COMBINATION UNIT 315A–400A

315A	TP&N 4P	no fuses supplied	193153N* 193154
400A	TP&N 4P	no fuses supplied	194003N 194004
Accessories	Cable Spreader Box Copper Isolator Link Each Castell Lock (factory fitted)		19400CSB 19LK400 Suffix CLK
Modular width			8
Terminals	315A–400A		M10
Spreading room		up to 300mm ² 4 Core *	
Cable lug palm copper size		45mm wide Maximum	

* Spreading Room is allowed for at one end only. To fit a 4 core cable at both ends an additional Cable spreader box will be required. 1 Module = 52.5mm


630/800

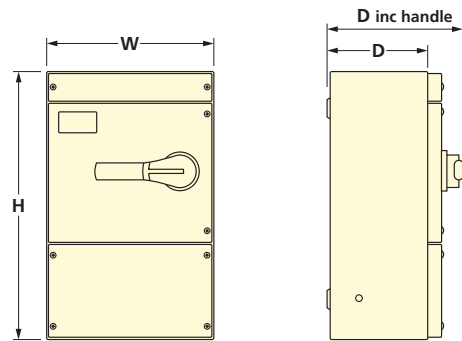
Cable Spreader Boxes

1949BB

250A Terminals

400A Terminals
FUSE COMBINATION UNIT 630A–800A

630A	TP&N 4P	no fuses supplied	196303N* 196304
800A	TP&N 4P	no fuses supplied	198003N 198004
Accessories	Cable Spreader Box		19800CSB
	Copper Isolator Link Each		19LK800
	Brass Gland Plate		19800BGP
	Castell Lock (factory fitted)		Suffix CLK
Modular width			12
Terminals	630A–800A		M12
Spreading room		up to 630mm ² 4 Core *	
Cable lug palm copper size		63mm wide Maximum	

FUSESTAR DIMENSION DETAILS


	H	W	D	D inc. handle
20-32A	220	210	136	200
63A	420	263	188	263
100A	420	263	188	263
125-200A	525	315	241	305
315-400A	735	420	241	305
630-800A	850	620	293	355

BUS BAR CHAMBER

400A	TP&N	16 Mod.	1949BB
Dimensions	H 368	W 840	D 190
Terminals Pre fitted	4 x 250A & 400A Supplied		M8
Fault rated			31.5kA 1Sec

SWITCH MOUNTING & BLANK FILLER PLATES

20A–32A	4 MOD	1932MTG
63A–100A	5 MOD	19125MTG
125A–200A	6 MOD	19200MTG
315A–400A	8 MOD	19400MTG
1 Mod	Blank Filler Plate	191BL
2 Mod	Blank Filler Plate	192BL
4 Mod	Blank Filler Plate	194BL
8 Mod	Blank Filler Plate	198BL

Note: Bus Bar chamber supplied with 2 x 4 Mod, 2 x 2 Mod & 2 x 1 Mod
Blank Filler Plates 1 – Mod = 52.5

250A	Pack quantity 4	19TMBB
-------------	-----------------	---------------



Steel Enclosure Hinged Door



Insulated enclosure Yellow/Red Handle



Insulated enclosure Black / Grey Handle



Accessories

SWITCH DISCONNECTOR STEEL ENCLOSURE

Rating (A)	Box Size	TP&N/SP&N	TP&SWN
20	1	190203NSW1	190204SW1
32	1	190323NSW1	190324SW1
40	1	190403NSW1	190404SW1
63	1	190633NSW1	190634SW1
63	2	190633NSW2	190634SW2
100	2	191003NSW2	191004SW2
125	2	191253NSW2	191254SW2

• Hinged Door

SWITCH DISCONNECTOR INSULATED ENCLOSURE

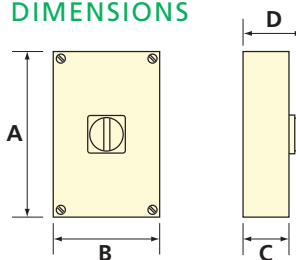
Rating (A)	Box Size	Yellow/Red Handle	Black/Grey Handle
16	A	15416/11	15416/12
25	A	15425/11	15425/12
32	B	15432/11	15432/12
40	B	15440/11	15440/12
63	C	15463/11	15463/12
80	D	15480/11	15480/12
100	D	154100/11	154100/12
125	E	154125/11	154125/12

• Gland Fixings are Metric sizes
 • Optional Switched Neutral
 15416/11 & 15416/12 have Non-interlocked handles.

ACCESSORIES

Description		LIST No.
Neutral Link	63amp	19963
	125amp	199125
Auxiliary Switch	10amp	19701
Terminal Shrouds		
SP	16-63amps (set of 2)	19811
TP	16-63amps (set of 2)	19813
SP	63-125amps (set of 2)	19821
TP	63-125amps (set of 2)	19823
Switched 4th Pole		
16A		198164
32A		198324
40A		198404
63A		198634
80A		198804
100A		1981004
125A		1981254

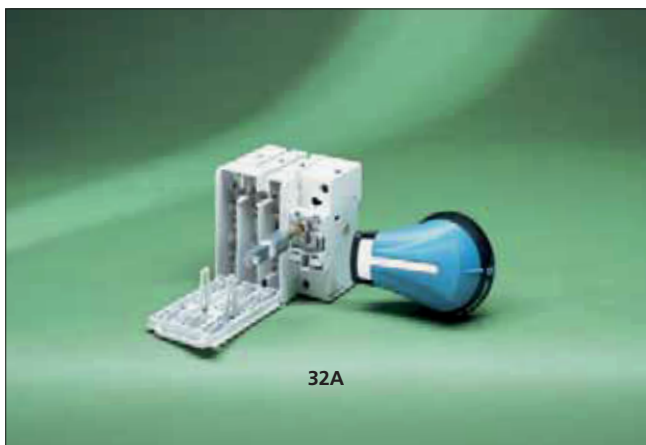
DIMENSIONS



BOX	A	B	C	D
A	130	85	75	105
B	175	125	100	137
C	250	175	100	135
D	310	200	135	170
E	410	200	135	170
1	220	158	136	172.5
2	325	158	136	172.5



**63A - 200A TP&N
Panel Board Switch**



32A



315A - 400A



630A - 800A

SKELETON FUSE SWITCH ASSEMBLIES FOR USE WITH SYSTEM POWERSTAR

FOR USE IN FUSE SWITCH PANEL BOARD ONLY.

Triple Pole and Integrated Neutral link Fuse Switch, complete with shaft, handle and terminal shroud for outgoing cables.

Rating	Format	LIST No
63A	TP & N	19KP0633N
100A	TP & N	19KP1003N
160A	TP & N	19KP1603N
200A	TP & N	19KP2003N

FOR USE IN ELEMENTS OF SYSTEM POWERSTAR, OTHER THAN PANEL BOARDS.

For use in Fuse Switches complete with shaft, handle and terminal shroud for outgoing cables.

Rating	Format	LIST No
32A	TP & N	19K0323N
63A	TP & N	19K0633N
100A	TP & N	19K1003N
160A	TP & N	19K1603N
200A	TP & N	19K2003N
315A	TP & N	19K3153N
400A	TP & N	19K4003N
630A	TP & N	19K6303N
800A	TP & N	19K8003N

Rating	Format	LIST No
32A	4P	19K0324
63A	4P	19K0634
100A	4P	19K1004
160A	4P	19K1604
200A	4P	19K2004
315A	4P	19K3154
400A	4P	19K4004
630A	4P	19K6304
800A	4P	19K8004

• 63A to 200A 4P Fuse Switch Cannot be used in System Powerstar Form 4 Panel Boards

SIVACON S4

Part of the comprehensive SIVACON product range, which covers all aspects of power distribution: from the switchgear to the busbar trunking system. The integration in Totally Integrated Power assures full consistency in terms of planning and configuration.

New features for enhanced safety

As type-tested switchgear, SIVACON S4 stands for maximum reliability and a high degree of safety.

High-quality, perfectly matched switching devices facilitate an easy integration in the building control technology concept thanks to the system's outstanding feature: built-in intelligence. During operation, an efficient ventilation system prevents heat accumulation and heat pockets, thus assuring long-term system availability. A fast and easy access to the devices for setting purposes is facilitated through doors with central locking, swivel frames and quick-release locks. Thanks to the enormously powerful locking system, maximum personal safety is even guaranteed in fault cases.

Forms of internal separation 1, 2b, 3b, 4a, 4b (type 6 and 7) available.



Roof mounted arc-fault venting provides enhanced personnel protection

SIVACON S4 - CONSISTENT PROTECTION, MAXIMUM BENEFITS: Low-voltage Power Distribution Board

Construction:

The Sivacon S4 energy distribution concept consists of full galvanised chromed sheet steel frames, of sturdy self standing design, flush or wall mounted.

Sivacon S4 low-voltage power distribution are constructed in accordance to a modular design system by means of flexible assembly kits, and can be combined to meet a wide range of power distribution needs

Assembly kits with SENTRON 3WL

- Rated current 630 – 3200A
- 3 pole and 4 pole
- Withdrawable and fixed mounted design
- Copper assembly kits

Assembly kits with SENTRON 3KA & 3KL

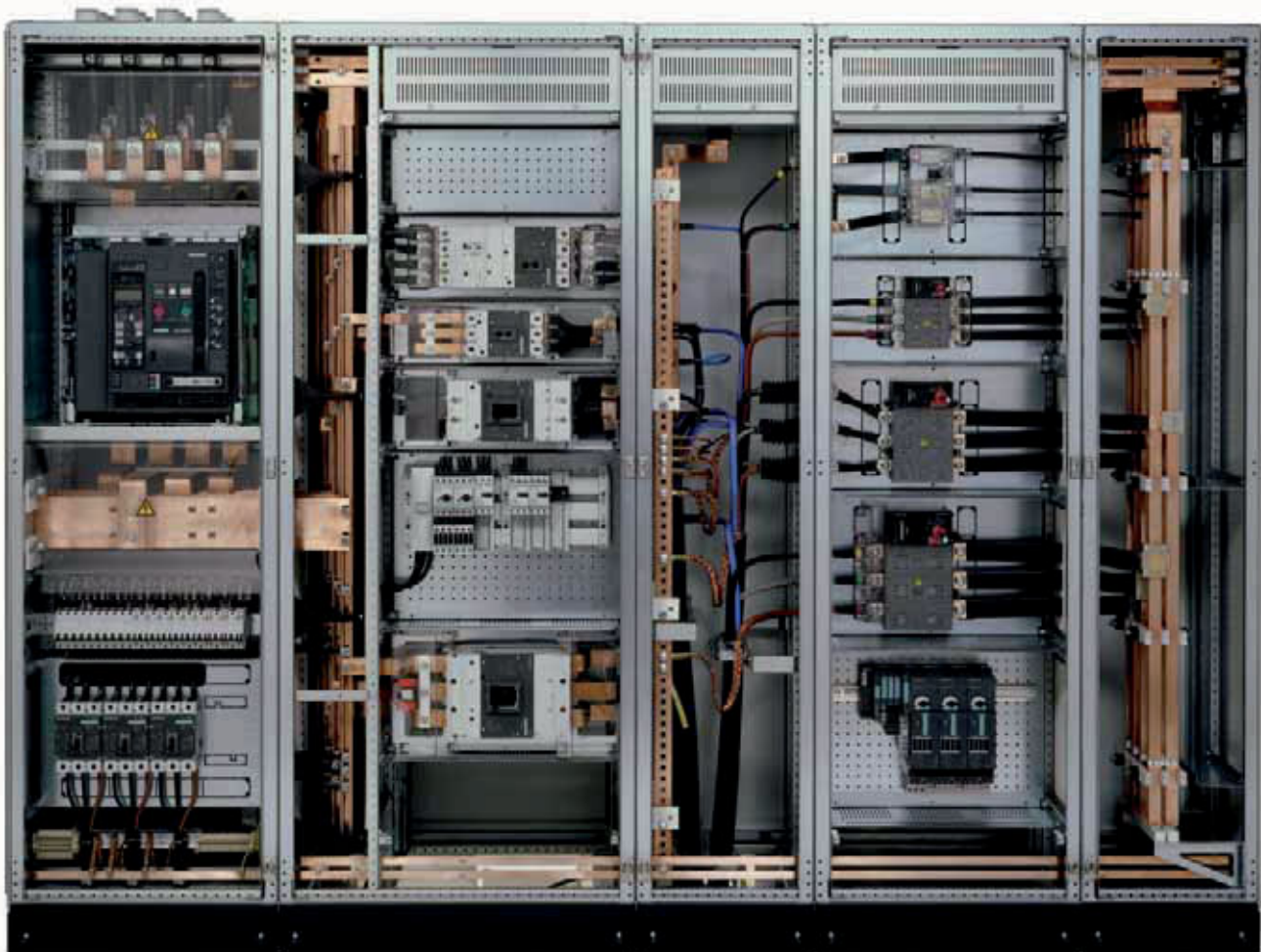
- SENTRON 3KL5/6 (LBS) switch disconnectors.
Rated current up to 630A
- SENTRON 3KL7/3KA7 (LBS) switch disconnectors.
Rated current up to 1250A
- 3 pole and 4 pole
- Fixed mounted design
- Copper assembly kits
- Door coupling rotary drive

Assembly kits with SENTRON 3VL & 3VT MCCB's

- 3 pole and 4 pole
- Plug-in and fixed mounted design
- Copper assembly kits

Assembly kits with built-in installation devices

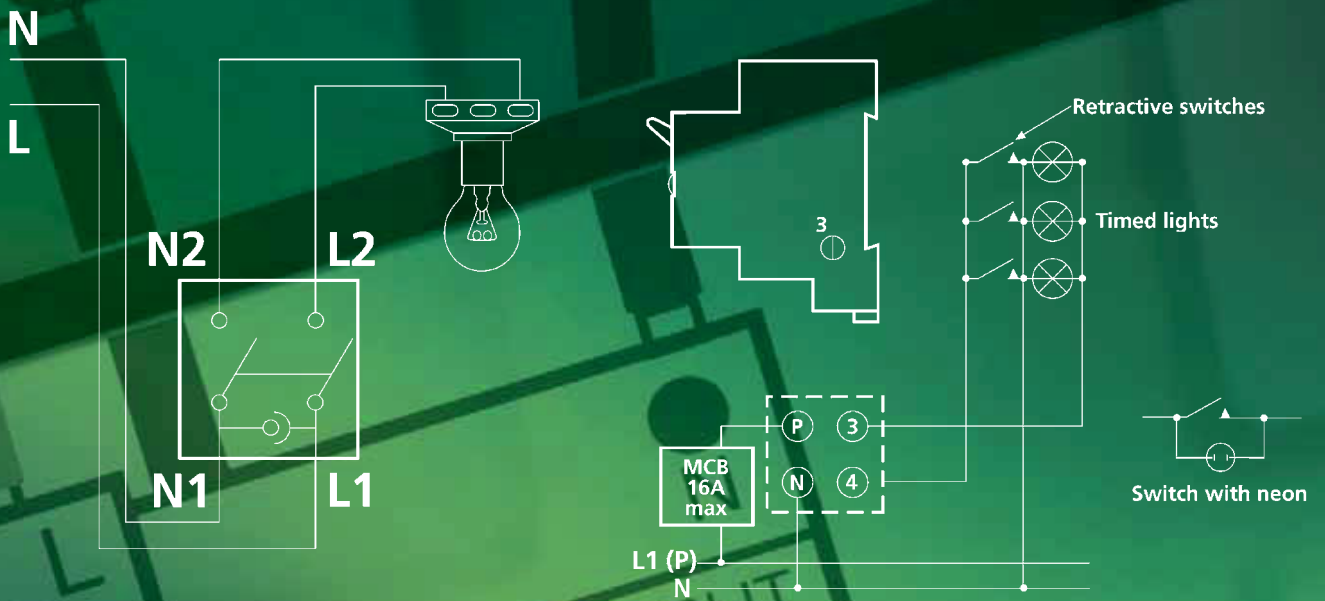
- Modular spacing
24 with 600mm cubicle width
36 with 800mm cubicle width
- 150mm or 200mm matrix
- Depth-adjustable multi profile busbar (AL 35mm)
- Sikclip raid wiring system



TECHNICAL DATA

COMMERCIAL CIRCUIT PROTECTION

	page		page
Loadstar	63	7T2 MCCB	74
Polestar Compact	65	7T3 MCCB	76
Polestar Compact MCBs	67	7T4-5 MCCB	78
Loadstar / Polestar Compact MCBs	68	Motor Protection / Cable Spreading	81
Powerstar 125 Panelboards	69	Fusestar	82
Powerstar 250 Panelboards	70	Motor Running Currents	84
Powerstar Panelboards General	71		
GG MCCB	72		
7PB GGN MCCB	73		



SWITCH

SPLIT
LOAD
RCCB

LOADSTAR RANGE

DISTRIBUTION BOARDS

Standards Compliance:	BSEN60439-3 and IEC 60439-3
Rated Voltage:	230/400V, 50/60Hz
Busbar Rating:	125A
Rated Insulation Voltage:	500V a.c.
Short Circuit Withstand:	16kA Conditional
Protection Degree:	IP3X (Door Closed)

ISOLATORS & SWITCH DISCONNECTORS

Standards Compliance:	BSEN60947-3 and IEC 60947-3
Rated Voltage:	230/400V, 50/60HZ
Rated Insulation Voltage:	500V a.c.
Rated Impulse Withstand Voltage:	4kV a.c. peak
Rated Duty 63 to 125A:	AC 22A (63A at AC23B)
Pole Configuration:	Double Pole, Triple Pole
Maximum Terminal Capacity:	50mm ²

RESIDUAL CURRENT CIRCUIT BREAKERS (RCCBs)

Standards Compliance:	EN61008 and IEC 61008
Rated Voltage:	230/400V, 50/60Hz
RCD Class:	Type AC
Maximum Terminal Capacity:	35mm ²

MINIATURE CIRCUIT BREAKERS (MCBs)

Standards Compliance:	BSEN60898 and IEC 60898
Rated Voltage:	230/400V, 50/60Hz
Short Circuit Capacity:	10kA (BSEN60898 and IEC60898). 15kA IEC/EN60947-2
Tripping Characteristics:	Types B, C and D
Temperature Range:	Maximum Operating Temperature: 55°C
Pole Configuration:	Single Pole, Double Pole, Triple Pole
Maximum Terminal Capacity:	35mm ²

RCBOs

Standards Compliance:	EN61009, IEC 61009
Rated Voltage:	230V 50Hz
Rated Short Circuit Capacity:	10kA
MCB Tripping Characteristics:	Types B and C
RCD Class:	Type A
Neutral:	Unswitched
Maximum Terminal Capacity:	16mm ²

Neutral flying lead and functional earth lead provided

During interruption of the neutral conductor the protective function is guaranteed when FE & PE conductors are connected

TYPE B AND ROW DISTRIBUTION BOARDS

125A Standard		125A Integral DIN	
List No.	H	List No.	H
18LS04MR	490	18LS04D	650
18LS06MR	570	-	-
18LS08MR	650	18LS08D	815
18LS12MR	815	18LS12D	975
18LS16MR	895	18LS16D	1140
18LS20MR	1000	18LS20D	1140
18LS24MR	1140	-	-

Add on enclosures

List No.	H	List No.	H
18DIN18	245	18AS1	245
18DIN36	410	18AS2	410
18SB	245	18AS3	570
		18AS4	735
		18AS5	815
18LS12A	675	18AS6	815

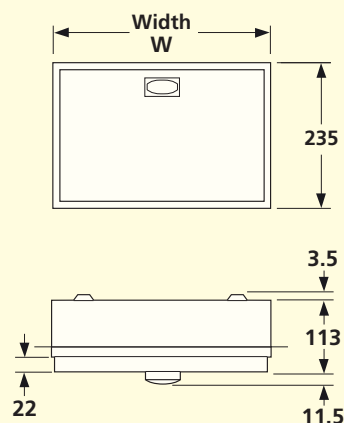
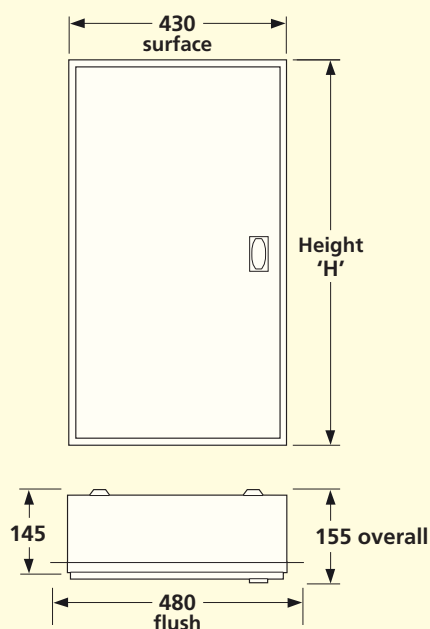
Meter Packs

18ML125	245
18ML125LP	410

Dual meter packs (LP) have a width equal to that of two distribution boards

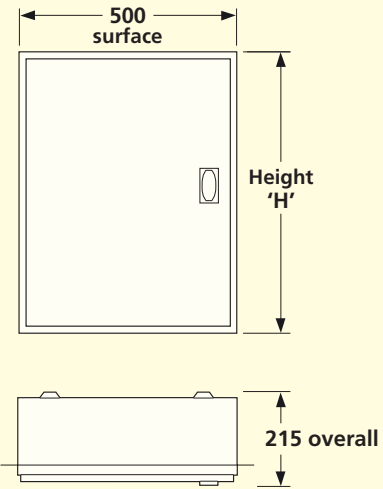
TYPE A DISTRIBUTION BOARDS & GP ENCLOSURES

List No.	W	List No.	H	W	D
18SN05	188	18GP2S	61	152	51
18SN08	242	18GP4S	76	140	67
18SN11	293				
18SN14	343	18GP2M	90	225	66
18SN19	437	18GP4M	135	346	74



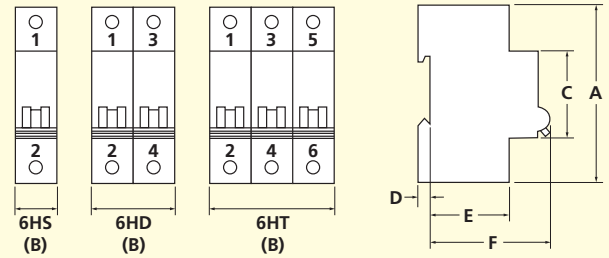
IP66 TYPE B DISTRIBUTION BOARDS

125A	
List No.	H
IP18LS04	800
IP18LS06	800
IP18LS08	800
IP18LS12	1000
IP18PLS16	1000



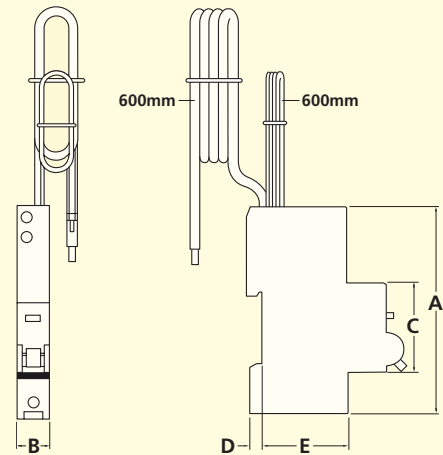
MINIATURE CIRCUIT BREAKERS (MCBs)

List No	A	B	C	D	E	F
6HS ...	90	18	45	6	44	70
6HD ...	90	36	45	6	44	70
6HT ...	90	54	45	6	44	70



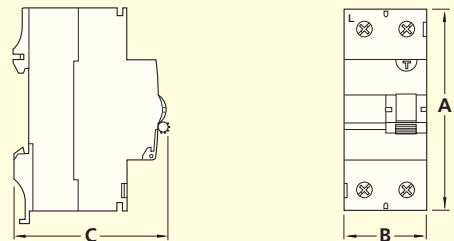
LOADSTAR RCBOs (SINGLE MODULE)

List No	A	B	C	D	E
6HSR ... /30 ...	125	17.6	45	6.2	44



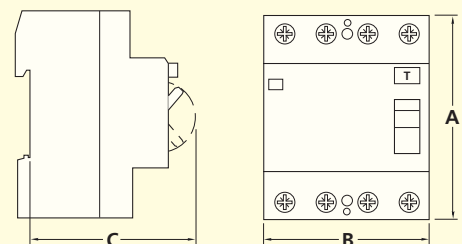
2 MODULE RESIDUAL CURRENT CIRCUIT BREAKERS

List No	A	B	C
18R100 / ... / 2	90	35	75



4 MODULE RESIDUAL CURRENT CIRCUIT BREAKERS

List No	A	B	C
18R100 / ... / 4	85	70	68



POLESTAR COMPACT RANGE

DISTRIBUTION BOARDS

Standards Compliance:	BSEN60439-3 and IEC 60439-3
Rated Voltage:	230/400V, 50/60Hz
Busbar Rating:	125/200A
Rated Insulation Voltage:	500V a.c.
Short Circuit Withstand:	16kA Conditional
Protection Degree:	IP3X (Door Closed)

ISOLATORS & SWITCH DISCONNECTORS

Standards Compliance:	BSEN60947-3 and IEC/EN60907
Rated Voltage:	230/400V, 50/60Hz
Rated Insulation Voltage:	500V a.c.
Rated Impulse Withstand Voltage:	6kV a.c. peak
Rated Duty:	
125A Modular	AC 22A
200A	AC 22B
Pole Configuration:	Double Pole, Triple Pole
Isolators 63 to 125A:	50mm ²
200A	120mm ²

RESIDUAL CURRENT CIRCUIT BREAKERS (RCCBs)

Standards Compliance:	EN61008 and IEC 61008
Rated Voltage:	230/400V, 50/60Hz
RCD Class:	Type AC
Maximum Terminal Capacity:	35mm ²

MINIATURE CIRCUIT BREAKERS (MCBs)

Standards Compliance:	BSEN60898 and IEC 60898
Rated Voltage:	230/400V, 50/60Hz
Short Circuit Capacity:	16kA BSEN60898-1 and IEC60898-1
Tripping Characteristics:	Types B, C and D
Temperature Range:	Maximum Operating Temperature: 55°C
Pole Configuration:	Single Pole, Double Pole, Triple Pole
Maximum Terminal Capacity:	35mm ²

MOULDED CASE CIRCUIT BREAKERS (MCCBs)

Standards Compliance:	IEC/EN60947-2
Rated Current In:	200A
Rated Configuration:	3 Pole or 4 Pole
Rated Operational voltage:	690V
Rated Breaking Capacity:	65kA

RCBOs

Standards Compliance:	EN61009, IEC 61009
Rated Voltage:	230V 50Hz
Rated Short Circuit Capacity:	16kA
MCB Tripping Characteristics:	Type C
RCD Class:	Type A
Neutral:	Unswitched
Maximum Terminal Capacity:	16mm ²

Neutral flying lead and functional earth lead provided

During interruption of the neutral conductor the protective function is guaranteed when FE & PE conductors are connected

TYPE B AND ROW DISTRIBUTION BOARDS

125A		200A	
List No.	H	List No.	H
18PSC04MR	490	18PSC204MR	768
18PSC06MR	570	18PSC206MR	822
18PSC08MR	650	18PSC208MR	876
18PSC12MR	815	18PSC212MR	984
18PSC16MR	895	18PSC216MR	1092
18PSC20MR	1000	18PSC220MR	1200
18PSC24MR	1140	18PSC224MR	1308

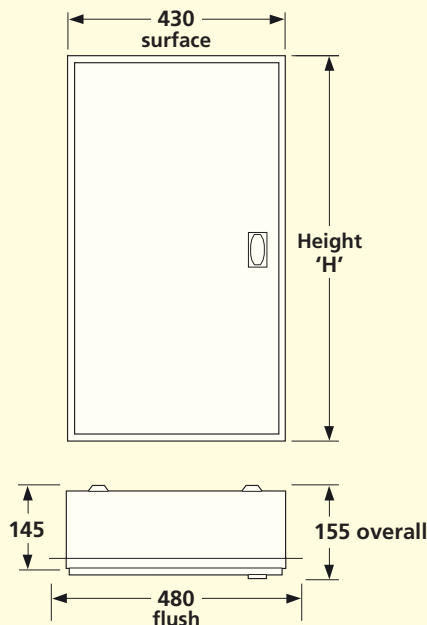
Add on enclosures

List No.	H	List No.	H
18PSCDIN18	245	18PSCAS1	245
18PSCDIN36	410	18PSCAS2	410
18PSCSB	245	18PSCAS3	570
		18PSCAS4	735
		18PSCAS5	815

Meter Packs

18MPSC125	245		
18MPSC125LP	410	18MPSC250LP	410

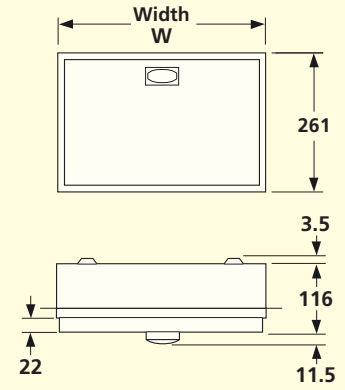
Dual meter packs (LP) have a width equal to that of two distribution boards



TYPE A DISTRIBUTION BOARDS

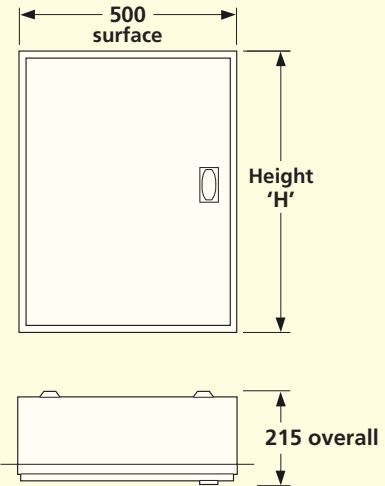
List No.	W	List No.	W	List No.	W	List No.	W
18PSC05/21A	188	18PSC05/33A	188	18PSC05/31A	188	18PSC10/S413A	343
18PSC08/21A	242	18PSC08/33A	242	18PSC08/31A	242	18PSC10/S513A	343
18PSC11/21A	293	18PSC11/33A	293	18PSC11/31A	293	18PSC10/S613A	343
18PSC14/21A	343						
18PSC19/21A	438						
18PSC28/21A*	343						

* 2 Bank Unit H = 500mm



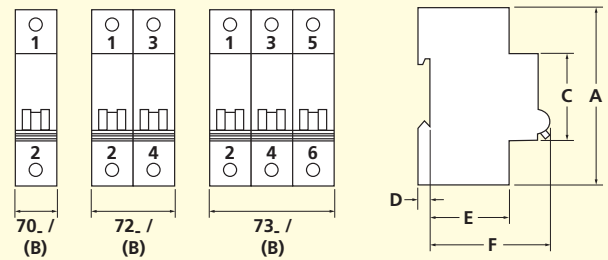
IP66 TYPE B DISTRIBUTION BOARDS

125A		200A	
List No.	H	List No.	H
IP18PSC04MR	800	IP18PSC204MR	800
IP18PSC06MR	800	IP18PSC206MR	800
IP18PSC08MR	800	IP18PSC208MR	800
IP18PSC12MR	1000	IP18PSC212MR	1000
IP18PSC16MR	1000	IP18PSC216MR	1000



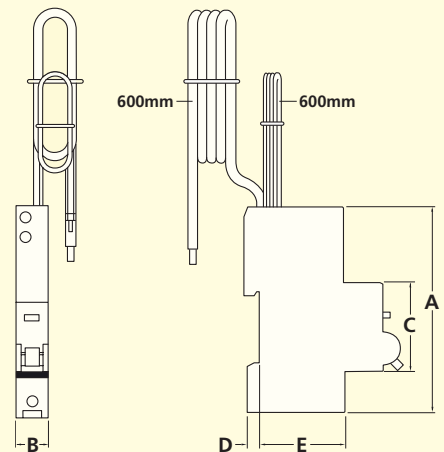
MINIATURE CIRCUIT BREAKERS (MCBs)

List No	A	B	C	D	E	F
70../...	90	18	45	6	44	70
72../...	90	36	45	6	44	70
73../...	90	54	45	6	44	70



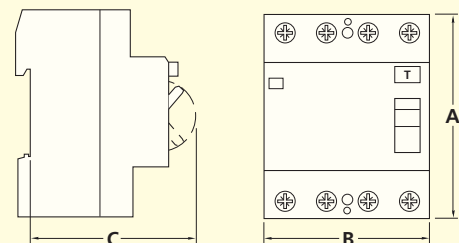
POLESTAR COMPACT RCBOs (SINGLE MODULE)

List No	A	B	C	D	E
701C/...3	125	17.6	45	6.2	44



4 MODULE RESIDUAL CURRENT CIRCUIT BREAKERS

List No	A	B	C
241/...	85	70	68



TYPE B TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
(A)										
6	11	23	24	24	24	24	24	24	24	24
10	18	38	40	40	40	40	40	40	40	40
16	28	60	64	64	64	64	64	64	64	64
20	35	75	80	80	80	80	80	80	80	80
32	56	120	128	128	128	128	128	128	128	128
40	70	150	160	160	160	160	160	160	160	160
50	88	188	200	200	200	200	200	200	200	200
63	111	237	252	252	252	252	252	252	252	252

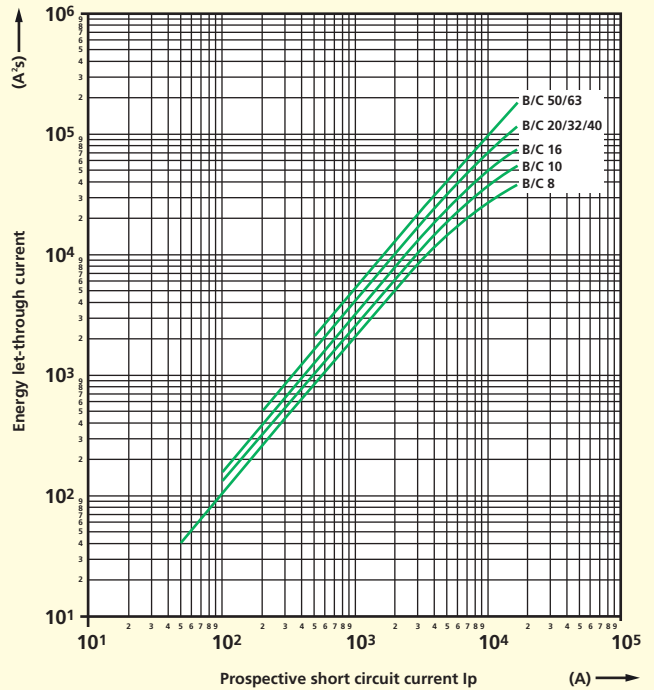
TYPE C TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
(A)										
6	11	21	29	30	38	39	39	39	39	39
10	18	35	48	50	62	65	65	65	65	65
16	28	56	77	80	100	104	104	104	104	104
20	35	70	96	100	124	130	130	130	130	130
32	56	112	154	160	199	208	208	208	208	208
40	70	140	192	200	248	260	260	260	260	260
50	88	175	240	250	310	325	325	325	325	325
63	111	221	303	315	391	410	410	410	410	410

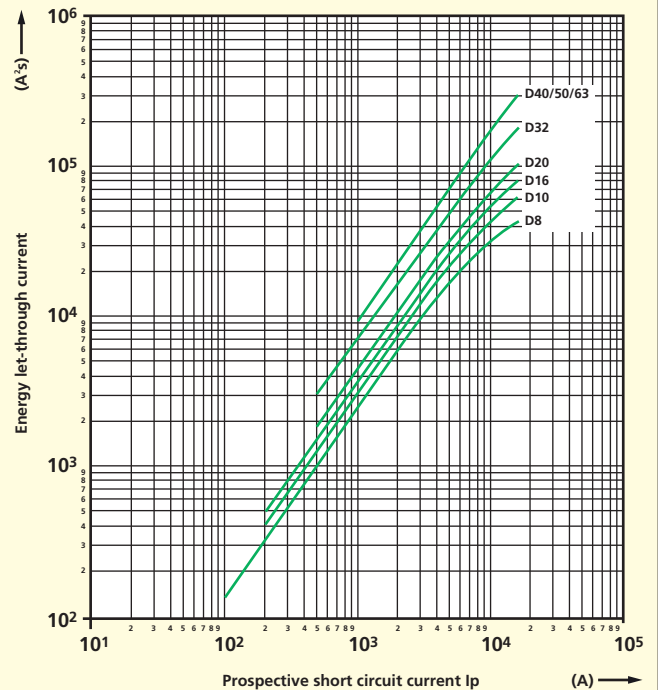
TYPE D TYPICAL TRIPPING TIMES

RATING	CURRENT REQUIRED TO OPERATE									
	60s	10s	5s	4s	3s	2s	1s	0.4s	0.1s	0.02s
(A)										
6	12	24	35	36	47	57	78	78	78	78
10	20	39	57	60	78	95	130	130	130	130
16	32	63	92	96	125	152	208	208	208	208
20	40	78	114	120	156	190	260	260	260	260
32	64	125	183	192	250	304	416	416	416	416
40	80	156	228	240	312	380	520	520	520	520
50	100	195	285	300	390	475	650	650	650	650
63	126	246	360	378	492	599	819	819	819	819

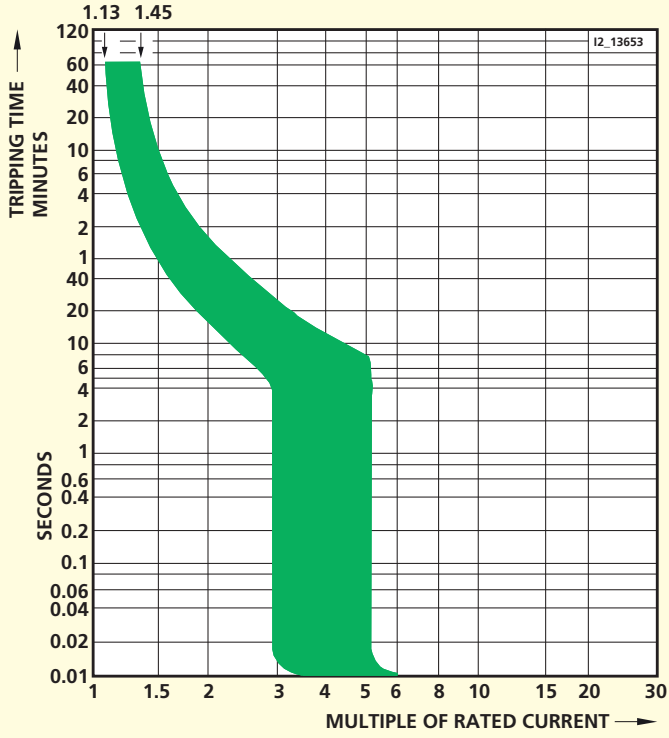
CHARACTERISTIC: B & C



CHARACTERISTIC: D

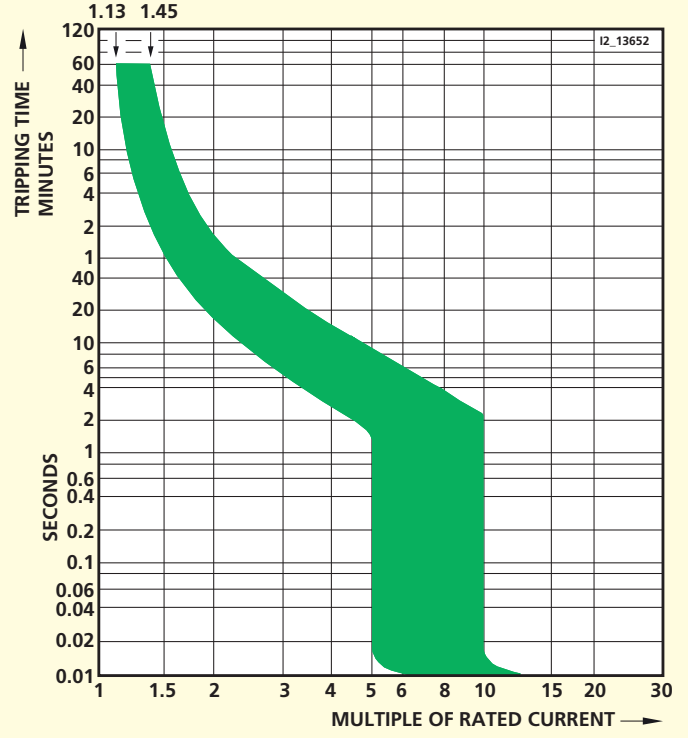


LOADSTAR & POLESTAR COMPACT MCBs TYPE B, C, & D – Typical time/current characteristics



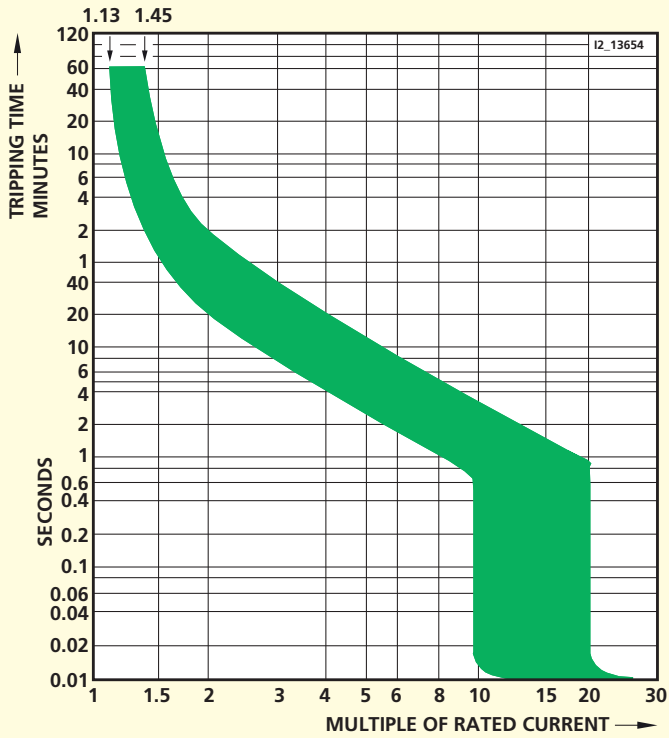
Tripping characteristic B

For universal use in socket outlet and lighting circuits. Proof of personal safety according DIN VDE 0100-410 is not required.



Tripping characteristic C

Particularly advantageous in lamp and motor circuits with higher starting currents.



Tripping characteristic D

For electrical circuits with strong pulse-generating equipment, such as transformers or solenoid valves.

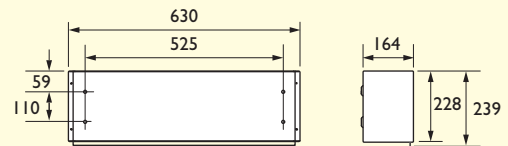
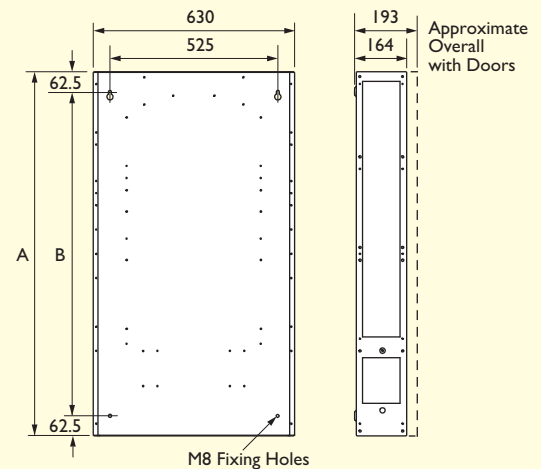
POWERSTAR PANELBOARD RANGE

POWERSTAR 125 PANELBOARDS

	250A	400A
Standards Compliance:	BS EN/IEC 61439-2:2009	
Rated Voltage:	230/400V 3ph 50Hz	
Fault Rating:	25kA Conditional	25kA for 1 sec
Degree of Protection:	IP3X (door closed)	
Form of Separation:	3B Type 2 Group Mounted	
Incoming maximum terminal capacity:	120mm ² 4 Core	32mm wide lug connections
(direct connection boards)	1 x M8 connection on 30mm wide copper	1 x M10 connection on 30mm wide copper
Finish:	Light Grey RAL7035	

POWERSTAR 125 PANELBOARD DIMENSIONS

250A		400A				
Modules	List No.	A	B	List No.	A	B
3						
12	17GG2506SW	912	787			
13	17GG2508SW	988	863			
14				17GG4006SW	1064	939
15	17GG2512SW	1140	1015	17GG4008SW	1140	1015
17	17GG2516SW	1292	1167	17GG4012SW	1292	1167
19				17GG4016SW	1444	1319



Add on Meter Packs

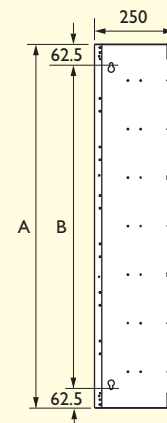
Modules	List No.	List No.
3	17GG250MPKIT	17GG400MPKIT

Add on units for 250A & 400A Panelboards

Modules	List No.
3	17GG125GGMB
3	17GG19DB
3	17GG24SS
3	17GGCSB

Cableways

Modules	List No.	A	B
3	17GG03MW	228	110
12	17GG12MW	912	787
13	17GG13MW	988	863
14	17GG14MW	1064	939
15	17GG15MW	1140	1015
17	17GG17MW	1292	1167
19	17GG19MW	1444	1319

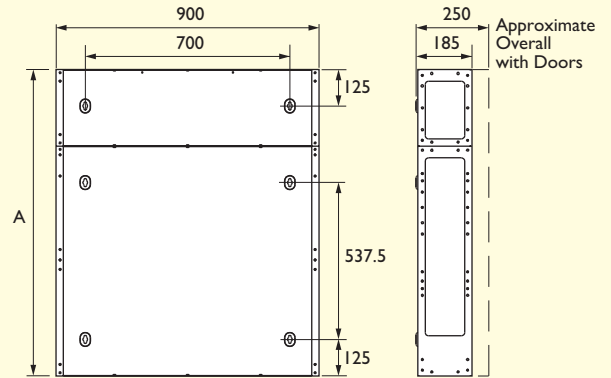


POWERSTAR PANELBOARD RANGE
POWERSTAR 250 PANELBOARDS

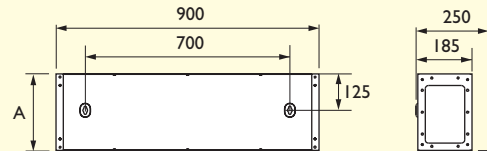
	400A	630A
Standards Compliance:	BS EN/IEC 61439-2:2009	
Rated Voltage:	230/400V 3ph 50Hz	
Fault Rating:	35kA for 1 sec	50kA for 1 sec
Degree of Protection:	IP3X (door closed)	
Form of Separation:	3B Type 2 Group Mounted	
Incoming maximum terminal capacity:	32mm wide lug connections	
Finish:	Light Grey RAL7035	

POWERSTAR 250 PANELBOARD DIMENSIONS

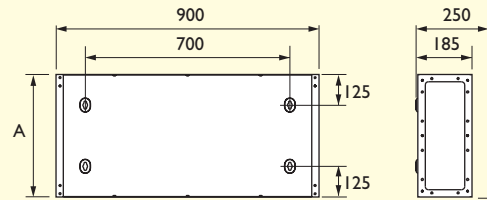
400A		630A	
List No.	A	List No.	A
173T2402	1055	173T2632	1055
173T2404	1160	173T2634	1160
173T2406	1265	173T2636	1265


4W Extension Units

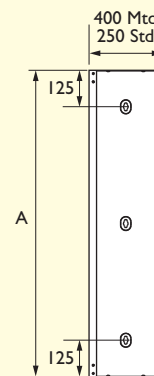
List No.	A	List No.	A
17GG404A	265	17GG634A	265


8W & 12W Extension Units

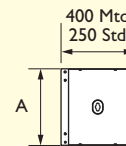
List No.	A	List No.	A
17GG408A	425	17GG638A	425
17GG4012A	583	17GG6312A	583
17T2408A	583	17T2638A	583


Panelboard Standard Cableways

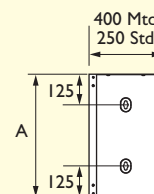
List No.	A	List No.	A
17T22CW	1055	17T22CWM	1055
17T24CW	1160	17T24CWM	1160
17T26CW	1265	17T26CWM	1265

Metered Cableways

4W Extension Unit Standard Cableways

List No.	A	List No.	A
17GG4CWA	265	17GG4CWMA	265

Metered Cableways

8W & 12W Extension Unit Standard Cableways

List No.	A	List No.	A
17GG8CWA	425	17GG8CWMA	425
17GG12CWA	583	17GG12CWMA	583
17T28CWA	583	17GG12CWMA	583

Metered Cableways


BSEN61439-1 : FORMS OF SEPARATION
FORMS OF SEPARATION

Main criteria	Sub criteria	Form	Type of Construction
No separation		Form 1	
Separation of busbars from all functional units.	Terminals for external conductors not separated from busbars.	Form 2a	Type 1. Busbar separation is achieved by insulated covering, e.g. sleeving, wrapping or coatings. Type 2. Busbar separation is by metallic or non-metallic rigid barriers or partitions
	Terminals for external conductors separated from busbars.	Form 2b	
- Separation of busbars from all functional units - Separation of all functional units from one another. - Separation of terminals for external conductors from the functional units, but not from the terminals of other functional units.	Terminals for external conductors not separated from busbars.	Form 3a	Type 1. Busbar separation is achieved by insulated covering, e.g. sleeving, wrapping or coatings. Type 2. Busbar separation is by metallic or non-metallic rigid barriers or partitions
	Terminals for external conductors and external conductors separated from busbars.	Form 3b	
- Separation of busbars from all functional units - Separation of all functional units from one another - Separation of terminals for external conductors associated with a functional unit from the terminals of any other functional unit and the busbars - Separation of the external conductors from the busbars - Separation of the external conductors associated with a functional unit from other functional units and their terminals - External conductors need not be separated from each other	Terminals for external conductors in the same compartment as the associated functional unit.	Form 4a	Type 1. Busbar separation is achieved by insulated covering, e.g. sleeving, wrapping or coatings. Cables may be glanded elsewhere
			Type 2. Busbar separation is by metallic or non-metallic rigid barriers or partitions. Cables may be glanded elsewhere
			Type 3. Busbar separation is by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility
	Terminals for external conductors not in the same compartment as the associated functional unit, but in individual, separate, enclosed protected spaces or compartments.	Form 4b	Type 4. Busbar separation is achieved by insulated covering, e.g. sleeving, wrapping or coatings. Cables may be glanded elsewhere
			Type 5. Busbar separation is by metallic or non-metallic rigid barriers or partitions. Terminals may be separated by insulated coverings and glanded in common cabling chamber(s)
			Type 6. All separation requirements are by metallic or non-metallic rigid barriers or partitions. Cables are glanded in common cabling chamber(s)
			Type 7. All separation requirements are by metallic or non-metallic rigid barriers or partitions. The termination for each functional unit has its own integral glanding facility

FORMS OF SEPARATION

As described in BSEN60439-1 the Forms of Separation comprise four levels as detailed in the above table. The various methods of achieving separation can involve sleeving the busbars inside a separate box or a combination of both methods.

COST EFFECTIVE SPECIFICATION

In order to gain maximum benefit from the standard it is necessary to consider the application for which the switchboard is required and the appropriate level of separation for the environment in which it is to be installed. For example a Form 4 switchboard may be appropriate where general access is permitted to the switch room but where the switchboard is in a locked substation with access restricted to qualified personnel, a lesser degree of separation may be more appropriate.

TYPICAL APPLICATIONS
Form 1 – No separation

Typical applications are places where the switchboard is in a secure location and where failure of the switchboard will cause little or no additional disruption to other areas being fed by the switchboard.

Form 2 – Separation of busbars from functional units.

Applications may well be the same as Form 1 but where it is important that a fault in the switchboard need not affect all functional units being fed from the same busbar system.

Form 3 – Separation of busbars from functional units and the functional units from one another but not their terminations.

Should be applied where it is important to provide protection from internal live parts and where failure of functional units being fed from the same busbar would cause unacceptable disruption.

Form 4 – Separation of busbars from functional units and the functional units from one another including their terminations.

Should be applied where it is important to provide protection from internal live parts and where failure of functional units being fed from the same busbar would cause unacceptable disruption. Because all the terminations are separated it is possible to isolate and work on a single functional unit.

GG FRAME SPECIFICATION

• Specification	IEC 60947-2
• Current Range	15 – 125A
• Ue Rated Operation Voltage	240V SP 415V TP
• Ui Rated Insulation Voltage	500V AC
• Rated Frequency	50/60Hz
• Release	Thermal Magnetic
• Adjustment	None
• Ambient Range	-20°C to 55°C
• Humidity Range	0 – 90%
• Weight	SP - 0.4kg TP - 0.95kg
• Mechanical Duration	8000 operations

AVAILABLE OPTIONS

- Padlocking
- AUX switches

SHORT CIRCUIT BREAKING CAPACITY

Type	
Ue	Icu
	TP
220 V	30
415 V	25
Ics = 50% Icu	

MAIN CONNECTIONS

Clamps: ≤ 30A = 16mm²
 ≥ 30A = 50mm²

SUMMARY

The Powerstar GG frame breaker is a compact, robust design that is suitable for panel or DIN rail mounting without the need for additional adapters. Accessories including auxiliary releases and contacts are available upon request.

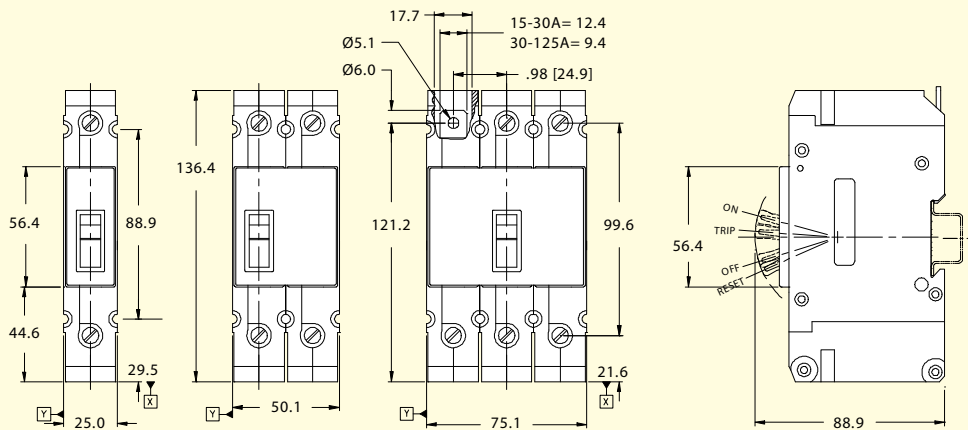
FROM THE 5 SEC VALUE FOR THE 125A BREAKER, THE ABOVE CURVE SUGGESTS A OHMIC VALUE OF 0.33 OHMS

0.4 SEC VALUES

Ampere	15	20	25	30	40	50	60	80	100	125
Ohm	1.18	0.88	0.71	0.59	0.44	0.35	0.29	0.27	0.22	0.2

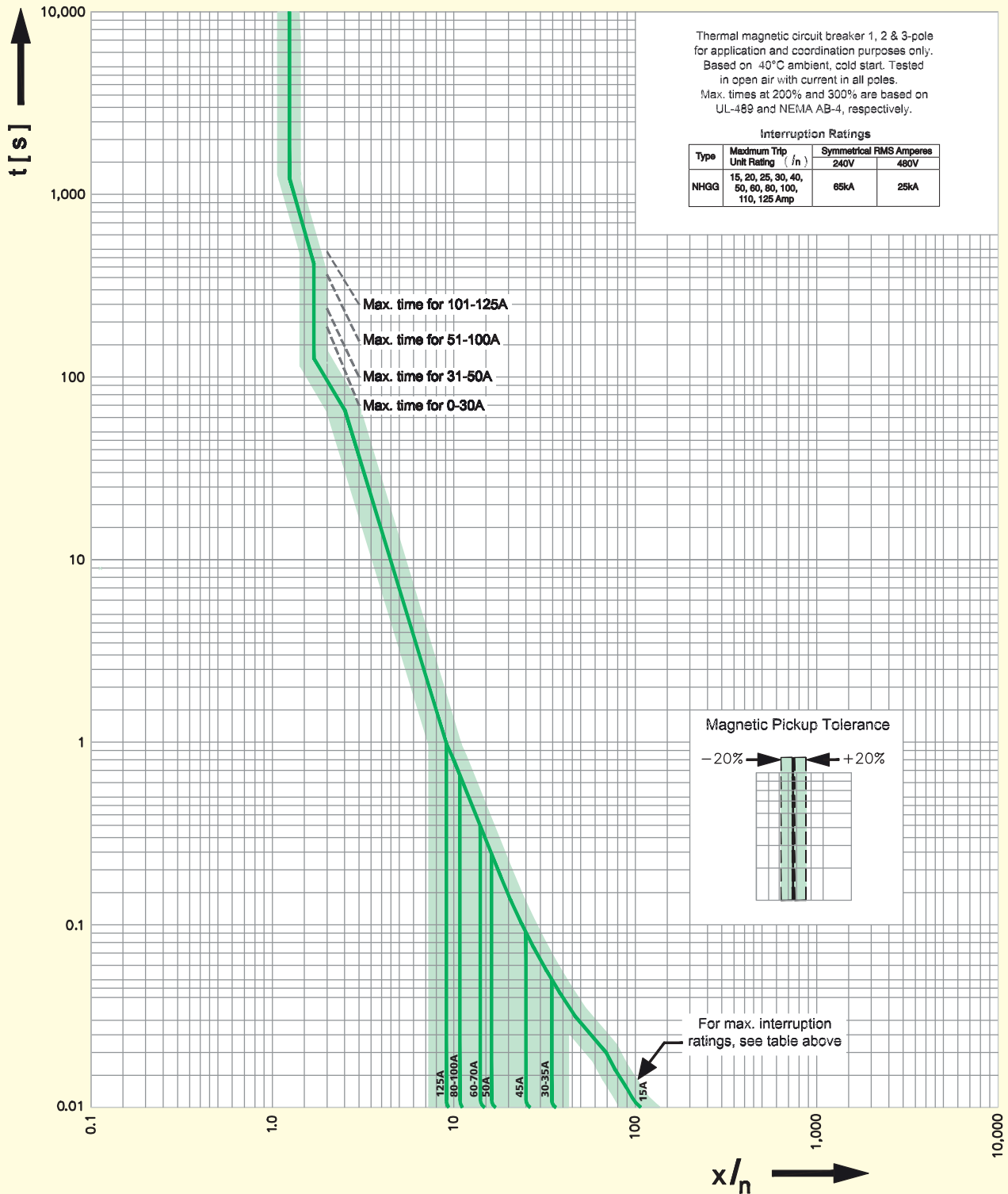
5 SEC VALUES (230V / 5.5X IN) FOR OTHER RATINGS ARE AS FOLLOWS

Ampere	15	20	25	30	40	50	60	80	100	125
Ohm	2.79	2.09	1.67	1.39	1.05	0.84	0.70	0.52	0.42	0.33



INSTANTANEOUS TRIP VALUES

- 125A = 1125A
- 100A = 1050A
- 80A = 840A
- 60A = 840A
- 50A = 800A
- 40A = 1000A
- 30A = 1050A
- 15A = 1200A



Thermal magnetic circuit breaker 1, 2 & 3-pole for application and coordination purposes only. Based on 40°C ambient, cold start. Tested in open air with current in all poles. Max. times at 200% and 300% are based on UL-489 and NEMA AB-4, respectively.

Interruption Ratings			
Type	Maximum Trip Unit Rating (I_n)	Symmetrical RMS Amperes	
		240V	480V
NHGG	15, 20, 25, 30, 40, 50, 60, 80, 100, 110, 125 Amp	65kA	25kA

7T2 FRAME MCCBs TECHNICAL SPECIFICATION

7T2 FRAME SPECIFICATION

• Specification	IEC 60947-2 & IEC 60947-3
• Current Range	40 – 250A
• Ue Rated Operation Voltage	690V AC
• Ui Rated Insulation Voltage	690V AC
• Rated Frequency	50/60Hz
• Release	Electronic
• Thermal Adjustment	0.4 – 1.0 x Trip Unit Rated Current
• Instantaneous Adjustment	Adjustable
• Icu (415V) Short Circuit Breaking Capacity	7T2S 36kA 7T2H 65kA
• Ambient Range	-40°C to 55°C
• Working Environment	Both Dry and Tropical Climates
• Mechanical Endurance	30,000 Cycles

7T2 FRAME FEATURES

The 7T2 circuit breaker consists of a switching unit and either a range of different rated electronic trip units or a switch disconnector module. The modular design provides the maximum flexibility as the user can decide not only the rating but also the function, disconnector or protective device. With a wide setting bandwidth electronic trip units offer unparalleled functionality.

AVAILABLE OPTIONS

- ST UVR
 - Aux SW
 - Rotary Handle (available on request)
 - Padlocking
 - Terminal Shrouds
- (See Product Section for selection)

SHORT CIRCUIT BREAKING CAPACITY

Ue	7T2S Icu	7T2H Icu
280 V	60kA	100kA
415 V	36kA	65kA

Ics = 50% Icu

TRIP UNIT SETTINGS

Over current IR = 0 x 4 - 1.0 x In
 Instantaneous 4 or 8 x IR
 In - Nominal Trip Unit Rating

MAIN CONNECTIONS

Front-connected clamps –
 150mm²

AUXILIARY EQUIPMENT OPTIONS (RETRO-FITTABLE)

- UVR
- Shunt Trip
- Auxiliary Switches

Shunt Trip Voltage Range ≥ 70%
 Under Voltage Release Threshold ≤ 35%
 Input Power of Auxiliary Releases < 3VA AC, < 3W DC

CURRENT CHARACTERISTICS

IR & II SET AT MINIMUM

AMPS	CURRENT VALUE (A)		VOLTAGE	OHMIC VALUE	
	0.4 SECONDS	5 SECONDS		0.4 SECONDS	5 SECONDS
100	150A	150A	230V	1.533Ω	1.533Ω
160	240A	240A	230V	0.958Ω	0.958Ω
250	375A	375A	230V	0.613Ω	0.613Ω

IR SET AT MINIMUM & II SET AT MAXIMUM

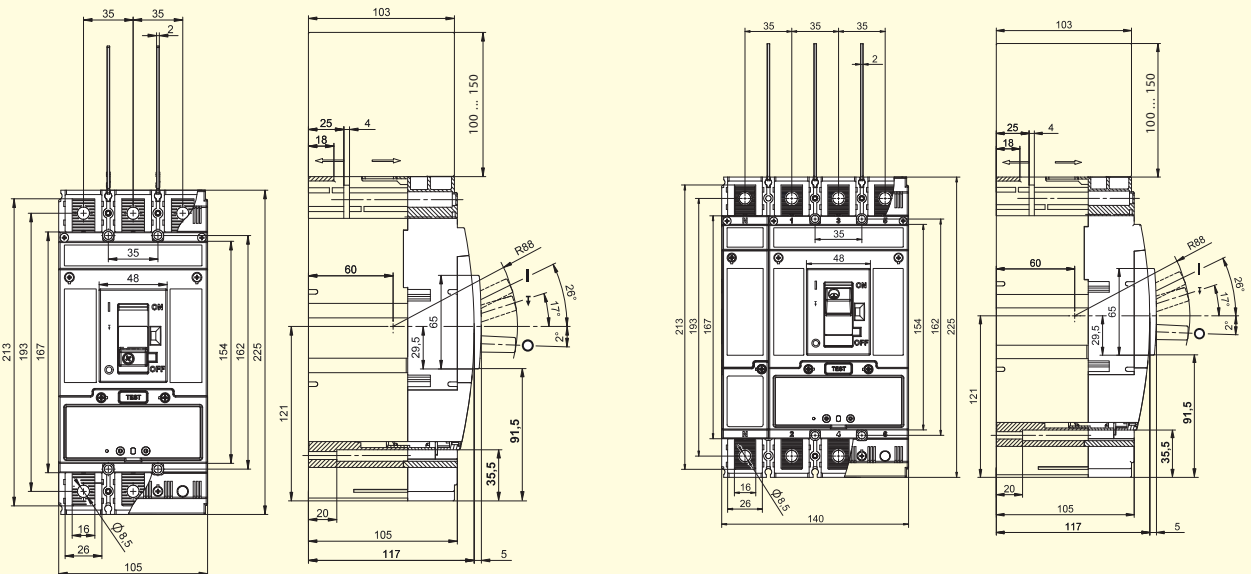
100	320A	230A	230V	0.719Ω	1.000Ω
160	512A	368A	230V	0.449Ω	0.625Ω
250	800A	575A	230V	0.288Ω	0.400Ω

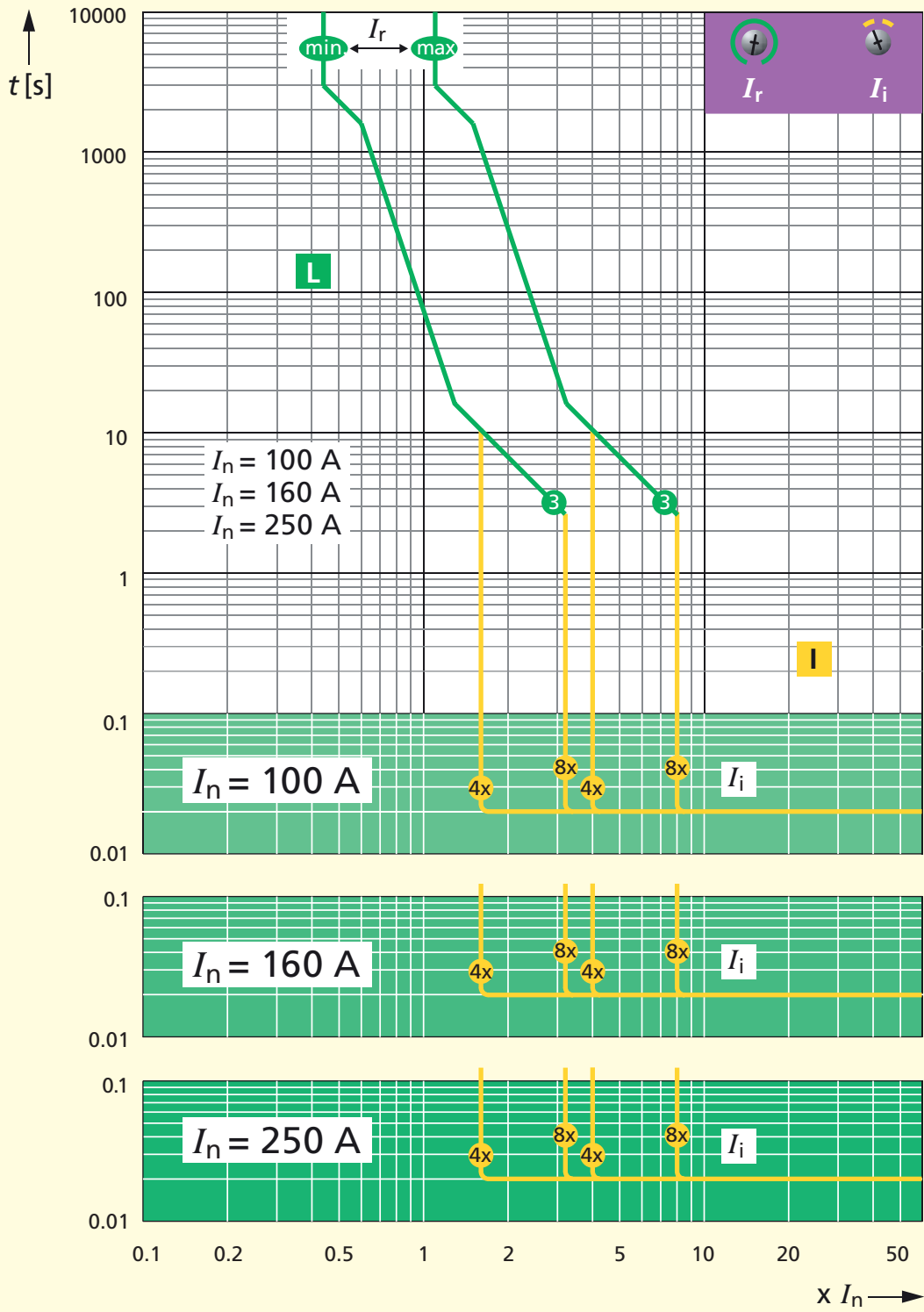
IR & II SET AT MAXIMUM

100	800A	600A	230V	0.288Ω	0.383Ω
160	1280A	960A	230V	0.180Ω	0.240Ω
250	2000A	1500A	230V	0.115Ω	0.153Ω

IR SET AT MAXIMUM & II SET AT MINIMUM

100	400A	400A	230V	0.575Ω	0.575Ω
160	640A	640A	230V	0.359Ω	0.359Ω
250	1000A	1000A	230V	0.230Ω	0.230Ω





7T3 FRAME MCCBs TECHNICAL SPECIFICATION

7T3 FRAME SPECIFICATION

• Specification	IEC 60947-2 & IEC 60947-3
• Current Range	100 – 630Amps
• Ue Rated Operation Voltage	690V AC
• Ui Rated Insulation Voltage	690V AC
• Rated Frequency	50/60Hz
• Release	Electronic
• Adjustment	0.4 – 1.0 x Trip Unit Rated Current
• Instantaneous Adjustment	Adjustable – see below
• Icu (415V) Short Circuit Breaking Capacity	7T3S 36kA 7T3H 65kA
• Working Environment	Both Dry and Tropical Climates
• Mechanical Endurance	20,000 Cycles

7T3 FRAME FEATURES

The 7T3 circuit breaker consists of switching unit and either a range of different rated electronic trip units, or a disconnecter module. The modular design provides the maximum flexibility as the user can decide not only the rating but also the function, disconnecter or protective device. With a wide setting bandwidth electronic trip units offer unparalleled functionality.

AVAILABLE OPTIONS

- ST UVR
 - Aux SW
 - Rotary Handle (available on request)
 - Padlocking
- (See Product Section for selection)

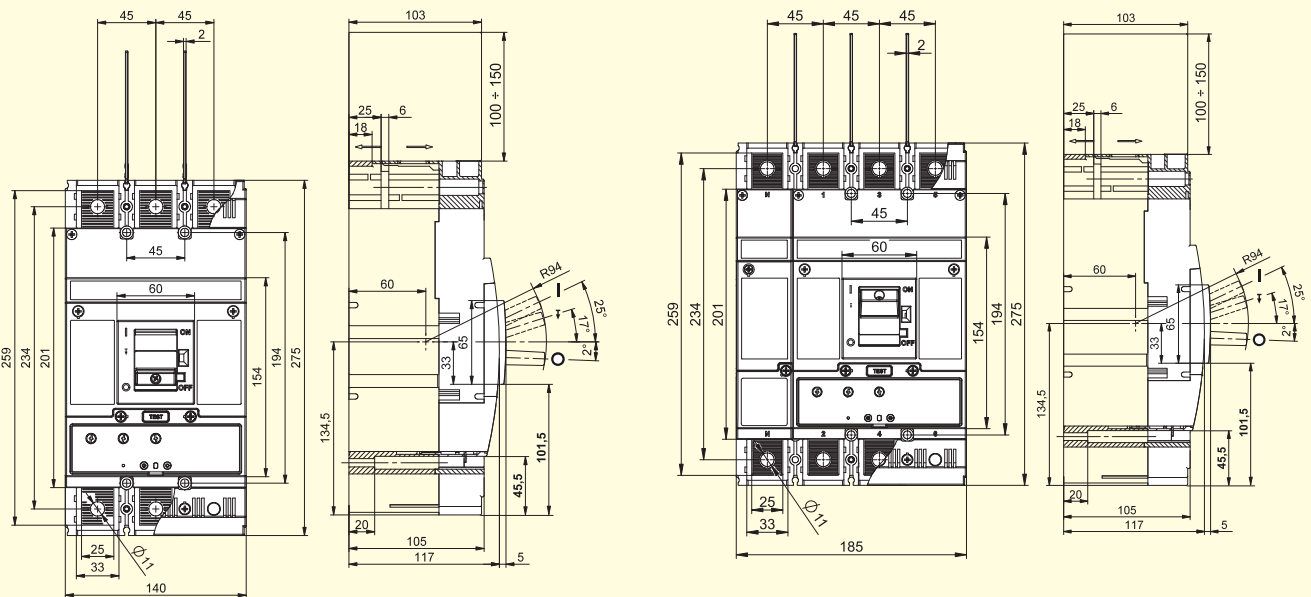
SHORT CIRCUIT BREAKING CAPACITY

Ue	7T3S Icu	7T3H Icu
230 V	60 kA	100 kA
415 V	36 kA	65 kA

Ics = 50% Icu

TRIP UNIT SETTINGS

Over current IR = 0 x 4 - 1.0 x In
 Instantaneous 4 or 8 x IR
 In - Nominal Trip Unit Rating



MAIN CONNECTIONS

The switching unit has a 32mm main contact which will accept up to M10 cable lugs, maximum width 30mm.

AUXILIARY EQUIPMENT OPTIONS

- UVR
- Shunt Trip
- Auxiliary Switches

Shunt Trip Voltage Range ≥ 70%
 Under Voltage Release Threshold ≤ 35%
 Input Power of Auxiliary Releases < 3VA AC, < 3W DC

CURRENT CHARACTERISTICS

IR & II SET AT MINIMUM

AMPS	CURRENT VALUE (A)		VOLTAGE	OHMIC VALUE	
	0.4 SECONDS	5 SECONDS		0.4 SECONDS	5 SECONDS
250	375A	375A	230V	0.613Ω	0.613Ω
400	600A	600A	230V	0.383Ω	0.383Ω
630	945A	945A	230V	0.243Ω	0.243Ω

IR SET AT MINIMUM & II SET AT MAXIMUM

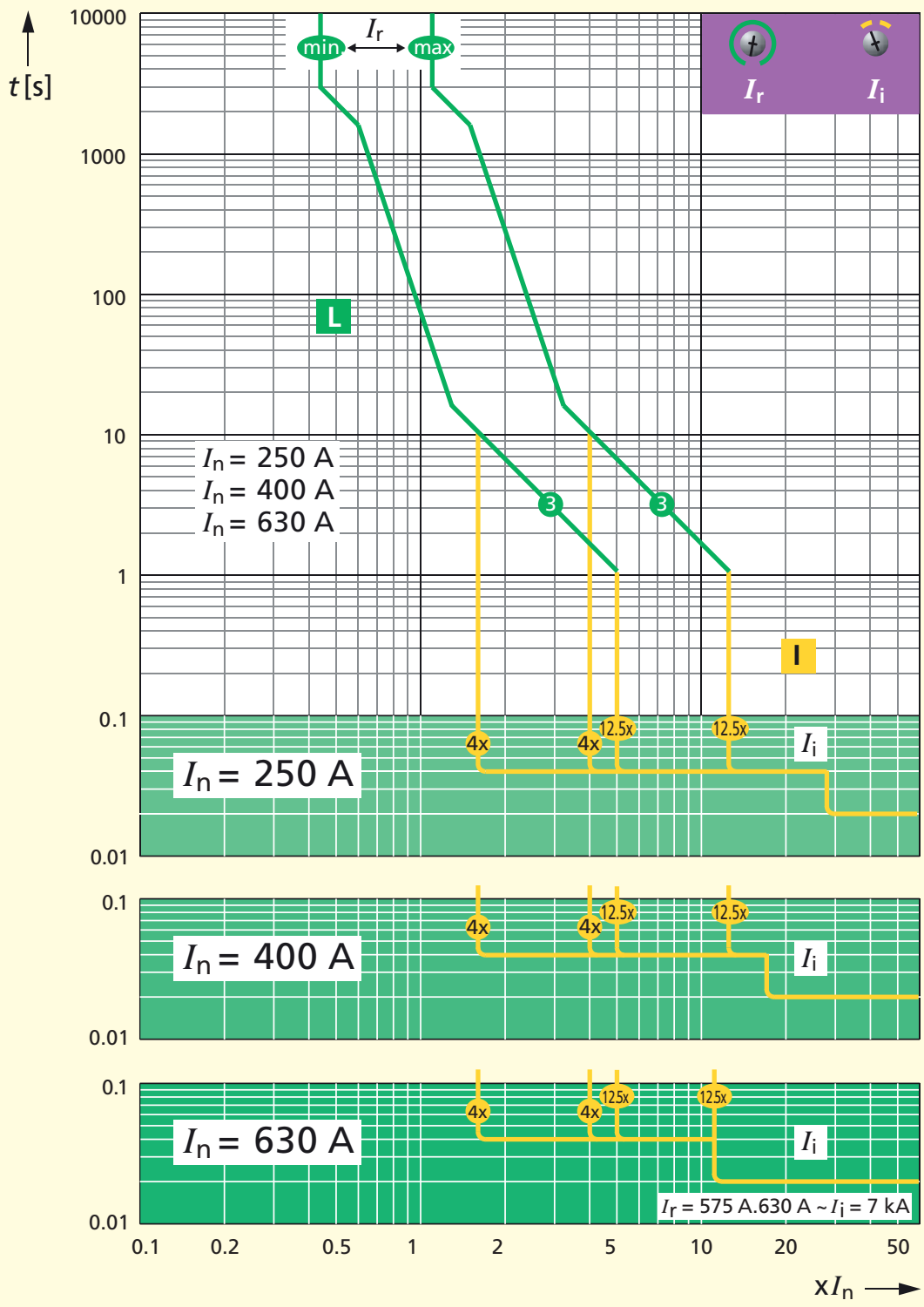
250	1250A	575A	230V	0.184Ω	0.400Ω
400	2000A	920A	230V	0.115Ω	0.250Ω
630	3150A	1449A	230V	0.073Ω	0.159Ω

IR & II SET AT MAXIMUM

250	3125A	1500A	230V	0.074Ω	0.153Ω
400	5000A	2400A	230V	0.046Ω	0.096Ω
630	7875A	3780A	230V	0.029Ω	0.061Ω

IR SET AT MAXIMUM & II SET AT MINIMUM

250	1000A	1000A	230V	0.230Ω	0.230Ω
400	1600A	1600A	230V	0.144Ω	0.144Ω
630	2520A	2520A	230V	0.091Ω	0.091Ω



7T4-5 FRAME SPECIFICATION

• Specification	IEC 60947-2 & IEC 60947-3
• Current Range	125 – 1600Amps 7T4, 125 – 1000Amps 7T5, 250 – 1600Amps
• Uie Rated Operation Voltage	690V AC
• Ui Rated Insulation Voltage	690V AC
• Rated Frequency	50/60Hz
• Icu (415V) Short Circuit Breaking Capacity	55/65kA
• Overload Adjustment	0.4 – 1.0 x Trip Unit Rated Current
• Instantaneous Adjustment	See Page over
• Ambient Range	-40°C to 55°C
• Working Environment	Both Dry and Tropical Climates
• Mechanical Endurance	10,000 Cycles

7T4-5 FRAME FEATURES

The 7T4-5 circuit breaker consists of switching unit and either a range of different rated electronic trip units, or a disconnecter module. The modular design provides the maximum flexibility as the user can decide not only the rating but also the function, disconnecter or protective device. With a wide setting bandwidth electronic trip units offer unparalleled functionality.

AVAILABLE OPTIONS

- ST UVR
- Aux SW
- Rotary Handle (available on request)
- Padlocking

SHORT CIRCUIT BREAKING CAPACITY

Ue	7T4 Icu	7T4 Ics	7T5 Icu	7T5 Ics
220 V	85kA	45kA	85kA	45kA
415 V	65kA	36kA	55kA	36kA

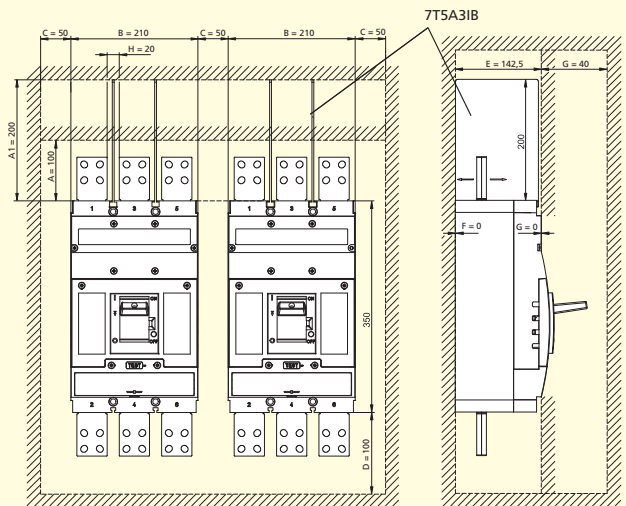
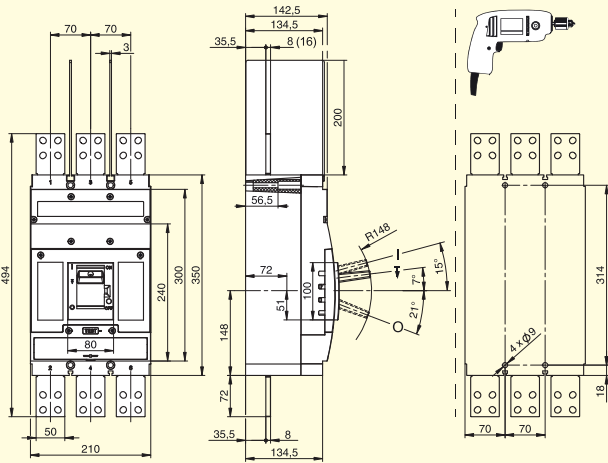
MAIN CONNECTIONS

The switching unit has a 50mm wide main contact which will accept either busbar or cable lugs.

AUXILIARY EQUIPMENT OPTIONS (RETRO-FITTABLE)

- UVR
- Shunt Trip
- Auxiliary Switches

Shunt Trip Voltage Range ≥ 70%
Under Voltage Release Threshold ≤ 35%
Input Power of Auxiliary Releases < 2.5VA AC, < 2W DC



7T4-5 FRAME MCCBs - TYPICAL TIME/CURRENT CHARACTERISTICS

7T4 CURRENT CHARACTERISTICS

IR & II SET AT MINIMUM

AMPS	CURRENT VALUE (A)		VOLTAGE	OHMIC VALUE	
	0.4 SECONDS	5 SECONDS		0.4 SECONDS	5 SECONDS
315	472.5A	472.5A	230V	0.487Ω	0.487Ω
630	945A	945A	230V	0.243Ω	0.243Ω
800	1200A	1200A	230V	0.192Ω	0.192Ω
1000	1500A	1500A	230V	0.153Ω	0.153Ω

IR SET AT MINIMUM & II SET AT MAXIMUM

315	2520A	724.5A	230V	0.091Ω	0.317Ω
630	5040A	1449A	230V	0.046Ω	0.159Ω
800	6400A	1840A	230V	0.036Ω	0.125Ω
1000	8000A	2300A	230V	0.029Ω	0.100Ω

IR & II SET AT MAXIMUM

315	4725A	1890A	230V	0.049Ω	0.122Ω
630	9450A	3780A	230V	0.024Ω	0.061Ω
800	12000A	4800A	230V	0.019Ω	0.048Ω
1000	15000A	6000A	230V	0.015Ω	0.038Ω

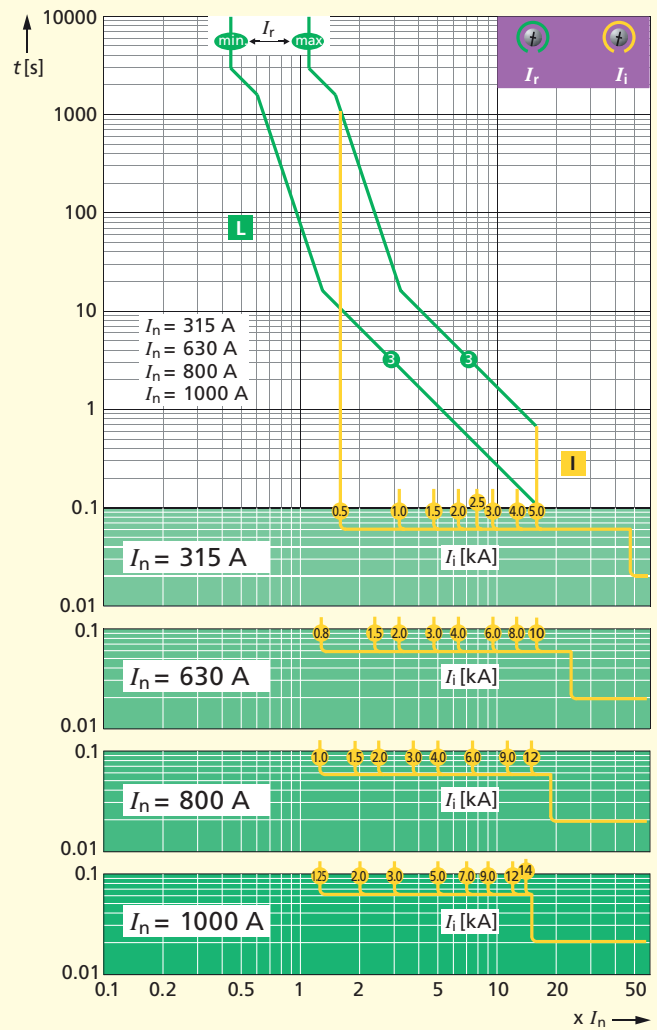
IR SET AT MAXIMUM & II SET AT MINIMUM

315	472.5A	472.5A	230V	0.487Ω	0.487Ω
630	945A	945A	230V	0.243Ω	0.243Ω
800	1200A	1200A	230V	0.192Ω	0.192Ω
1000	1500A	1500A	230V	0.153Ω	0.153Ω

ELECTRONIC TRIP UNIT SETTINGS

ADJUSTABLE SPECIFICATIONS

Order No.	Rated Current I_n	Overload Protection I_t	Restart	Instantaneous Short Circuit Protection I
	A	A		kA
7T431/OR	315	125, 137		0.5
		144, 160		1
		172, 180		1.5
		200, 220	$T_{(0)}$	2
		231, 243	$T_{(t)}$	2.5
		250, 260		3
		275, 290		4
7T463/OR	630	305, 315		5
		250, 260		0.8
		275, 290		1.5
		305, 315		2
		345, 360	$T_{(0)}$	3
		400, 435	$T_{(t)}$	4
		455, 480		6
7T480/OR	800	500, 550		8
		575, 630		10
		315, 345		1
		360, 400		1.5
		436, 455		2
		480, 500	$T_{(0)}$	3
		550, 575	$T_{(t)}$	4
7T410/OR	1000	610, 630		6
		685, 720		9
		760, 800		12
		400, 435		1.25
		455, 480		2
		500, 550		3
		575, 610	$T_{(0)}$	5
630, 685	$T_{(t)}$	7		
720, 760		9		
800, 866		12		
909, 1000		14		



7T5 CURRENT CHARACTERISTICS

IR & II SET AT MINIMUM

AMPS	CURRENT VALUE (A)		VOLTAGE	OHMIC VALUE	
	0.4 SECONDS	5 SECONDS		0.4 SECONDS	5 SECONDS
630	945A	945A	230V	0.487Ω	0.487Ω
1000	1500A	1500A	230V	0.243Ω	0.243Ω
1250	1875A	1875A	230V	0.192Ω	0.192Ω
1600	2400A	2400A	230V	0.153Ω	0.153Ω

IR SET AT MINIMUM & II SET AT MAXIMUM

630	5040A	1449A	230V	0.091Ω	0.317Ω
1000	8000A	2300A	230V	0.046Ω	0.159Ω
1250	10000A	2875A	230V	0.036Ω	0.125Ω
1600	12800A	3680A	230V	0.029Ω	0.100Ω

IR & II SET AT MAXIMUM

630	9450A	3780A	230V	0.049Ω	0.146Ω
1000	15000A	6000A	230V	0.024Ω	0.073Ω
1250	18750A	7500A	230V	0.019Ω	0.058Ω
1600	24000A	9600A	230V	0.015Ω	0.046Ω

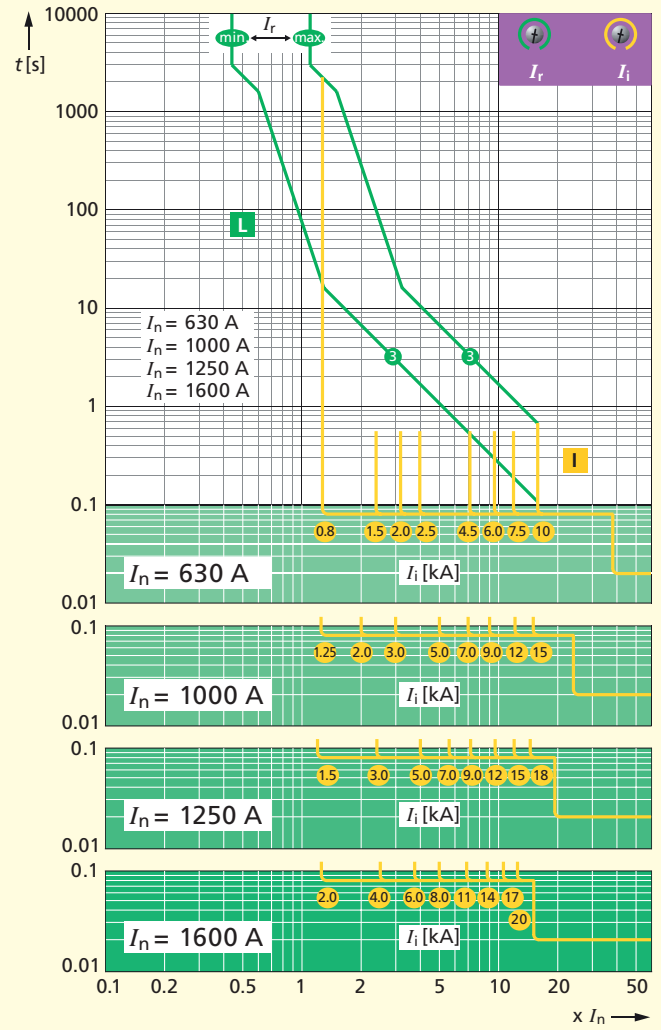
IR SET AT MAXIMUM & II SET AT MINIMUM

630	945A	945A	230V	0.487Ω	0.487Ω
1000	1500A	1500A	230V	0.243Ω	0.243Ω
1250	1875A	1875A	230V	0.192Ω	0.192Ω
1600	2400A	2400A	230V	0.153Ω	0.153Ω

ELECTRONIC TRIP UNIT SETTINGS

ADJUSTABLE SPECIFICATIONS

Order No.	Rated Current I_n	Overload Protection I_t	Restart	Instantaneous Short Circuit Protection I
	A	A		kA
7T563/OR	630	250, 260		0.8
		275, 290		1.5
		305, 315		2
		345, 360	$T_{(0)}$	2.5
		400, 435	$T_{(t)}$	4.5
		455, 480		6
		500, 550		7.5
7T510/OR	1000	575, 630		10
		400, 435		1.25
		455, 480		2
		500, 550		3
		575, 630	$T_{(0)}$	5
		630, 685	$T_{(t)}$	7
		720, 760		9
7T512/OR	1250	800, 870		12
		910, 1000		15
		500, 550		1.5
		577, 610		3
		630, 685		5
		722, 760	$T_{(0)}$	7
		800, 866	$T_{(t)}$	9
7T516/OR	1600	909, 1000		12
		1100, 1155		15
		1200, 1250		18
		630, 685		2
		720, 800		4
		870, 910		6
		1000, 1100	$T_{(0)}$	8
1155, 1200	$T_{(t)}$	11		
1250, 1300		14		
1375, 1445		17		
1500, 1600		20		



USE OF CAPACITOR BANKS

In general, reactive power compensation is used in order to reduce system losses and voltage drops in the power distribution system. As a result, the power fed into the system is used as active power and costs will be saved through a reduction in the capacitive and inductive power factors.

A combination of fixed and central compensations are used depending on the design of the low-voltage system and the loads involved.

Circuit breaker for protecting and switching capacitor banks

According to the relevant standards DIN VDE 0560 Part 41 / EN 60831-1 / IEC 70, capacitors must function under normal operating conditions with the current having an r.m.s. value up to 1.3 times the rated current of the capacitor. In addition, a further tolerance of up to 15% of the real value of the power must be taken into consideration.

The maximum current with which the selected circuit breaker can be constantly loaded, and which it must also be able to switch, is calculated as follows:

$$I_{N \max} = I_N \times 1.5 \text{ (r.m.s. value, r.m.s. current)}$$

Important values for selecting circuit breakers

More detailed information in the technical data: Capacitor banks (Page 173)

Abbr.	Designation
Q_N	Capacitor bank rated power in kVA
V_N	Rated voltage of the capacitor
I_N	Rated current of the capacitor bank
$I_{N \max}$	Maximum expected rated current
I_i	Value for setting the instantaneous short-circuit release
I_R	Value for setting the current-dependent delayed overload release

The following applies:

$$I_N = Q_N / \sqrt{3} \times V_N$$

$$I_R = I_{N \max} = I_N \times 1.5$$

$$I_i > 9 \times I_R \text{ (minimum)}$$

PRIMARY-SIDE TRANSFORMER PROTECTION

The circuit breaker as primary-side transformer protection

When switching on low-voltage AC transformers, the extremely high inrush current peaks place special demands on the trip unit or on the making-capacity of the circuit breakers if these are also used to switch the transformer.

For most applications, an inrush current of 20 to 30 times rated operating current is expected in practice and must be taken into account when selecting the circuit breakers.

The maximum short-circuit current I_k of the Powerstar circuit breakers 7T2 – 7T5 depends on the frame size. A circuit breaker in the lower setting range must therefore be operated for primary-side transformer protection.

Example:

A transformer with 500A rated current; 20 times inrush current

Selected: 7T4 with ETU of $I_n = 800A$; setting range $0.4 - 1 \times I_n = 315A$ to $800A$

I_R can be set at $500A$; Instantaneous short circuit protection set at $12kA = 24 \times$ current setting

Note

Switching the circuit breaker off

It is imperative to note that the minimum short-circuit current $I_{k \min}$ in accordance with VDE 0100 is switched off in every case using a protection facility (e.g. circuit breaker).

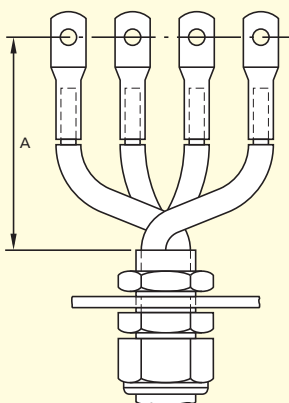
BS5372 SPREADING ROOM

The scope of BS5372 relates to dimensions which should be observed in the design of cable terminations, having uninsulated conductor fittings, for external cables on electrical equipment to enable the cables to be connected satisfactorily.

The standard is based upon the use of compression type conductor terminations and allows for the cores to be crossed within the terminal enclosure because this combination requires more space.

The diagram and table below gives the dimensions quoted by this standard.

4 CORE TERMINATIONS, SPREADING ROOM



Cable Size (mm ²)	Dimension 'A' (mm ²)
16	103
25	127
35	142
50	167
70	197
95	224
120	245
150	272
185	297
240	333
300	375

FUSESTAR HOUSED FUSE SWITCH

SPECIFICATION

- BSEN947-3
- Range of ratings 20A - 800A in 4 frame sizes
- Pole configurations SP & N, TP & N, and 4 Pole
- Voltage rating 415V ac
- Frequency rating 50/60 Hz
- Fuse type BS88
- Fused Short Circuit, 80kA RMS

PRODUCT FEATURES

- Switching speed totally operator independent
- Handle padlockable on or off

HOUSED UNITS

- Modular enclosure design (52.5mm) with inbuilt cable spreader box
- Reversible door which opens 180°
- IP4X



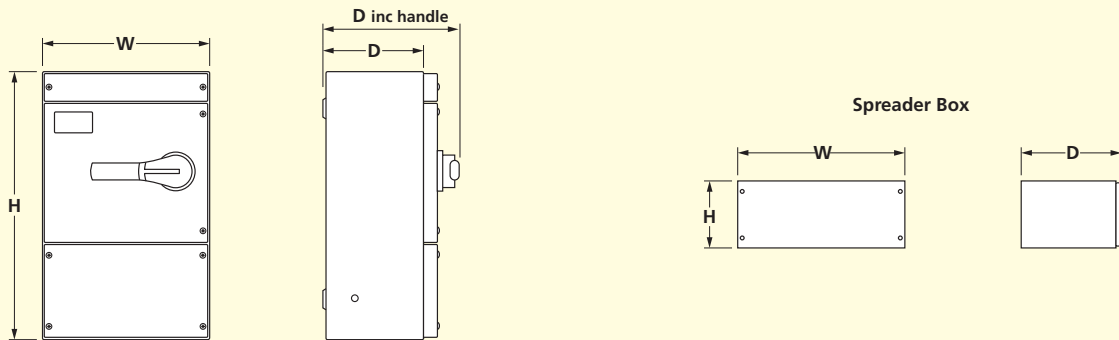
TECHNICAL DATA

	20-32A	63A	100A	125A	160A	200A	315A	400A	630A	800A
Mechanical Endurance	20,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	8,000	8,000
Ratings	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW	A kW
415V Ie/pe	32 15	63 30	100 51	125 75	160 90	200 80	315 160	400 220	630 355	800 450

FUSE COMPARISON DATA

Current Rating	BS 88 Reference	Lawson	GEC	Bussman
20/32A	A1	NIT	NIT	NITD
63A	A3	TIS, TIA GTIA	TIS, TIA	BAO, AAO
100A	A4 (Dia 31 max)	TCP	-	CEO
125A	A4 (Dia 31 max)	TFP	TFP	DEO, CEO
160/200A	A4 (Dia 31 max)	TFP	TFP	DEO, CEO
315A	B3, B2, B1	TFK, TF	TF	ED, DD, CD
400A	B3, B2, B1	TMF, TFK, TF, TC	TMF, TFK, TF, TC	ED, DD, CD
630A	C2, C1	TTM, TM	TTM, TM	FF, EF
800A	C3, C2, C1	TLM, TTM, TM	TLM, TTM, TM	GF, FF, EF

FUSESTAR DIMENSION DETAILS



DIMENSIONS (mm)

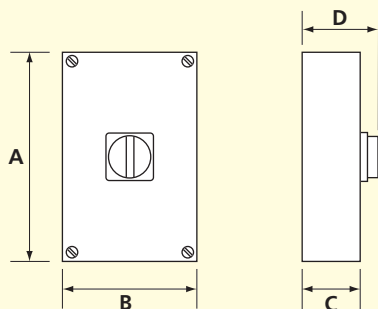
	H	W	D	D inc. handle		H	W	D
20-32A	220	210	136	200	SPREADER BOX	105	210	105
63A	420	263	188	263	SPREADER BOX	105	262.5	157.5
100A	420	263	188	263	SPREADER BOX	105	262.5	157.5
125-200A	525	315	241	305	SPREADER BOX	105	315	210
315-400A	735	420	241	305	SPREADER BOX	210	420	210
630-800A	850	620	293	355	SPREADER BOX	210	620	262.5

FUSESTAR HOUSED SWITCH DISCONNECTOR

	Moulded Enclosure								Sheet Steel Enclosure								
	16A	25A	32A	40A	63A	80A	100A	125A	20A	32A	40A	63A	63A*	100A	125A	20A	32A
RATING IN AMPS																	
Rated Insulation Voltage Ui (V)	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Dielectric Strength (kV) 50 Hz 1min	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Shock Resistance Uimp (kV)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8		
OPERATIONAL CURRENT Ie (A)																	
415 V AC - AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC23A / AC23B	16	25	32	40	63	80	80	80	20	32	40	63	80	80	80	20	32
500 V AC - AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC23A / AC23B	16	25	32	40	40	63	63	63	20	32	40	40	63	63	63	20	32
690 V AC - AC20A / AC20B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC21A / AC21B	16	25	32	40	63	80	100	125	20	32	40	63	80	100	125	20	32
AC22A / AC22B	16	25	32	40	63	80	100	100	20	32	40	63	80	100	100	20	32
AC23A / AC23B	16	25	25	25	25	50	50	50	20	25	25	25	50	50	50	20	25
MOTOR POWER (KW) AC 23																	
415 V AC	7.5	9	11	11	15	22	37	40	7.5	11	11	15	18.5	37	40	7.5	11
500 V AC	7.5	9	11	15	18.5	30	37	37	7.5	11	15	18.5	22	37	37	11	11
690 V AC	11	11	11	18.5	18.5	30	30	30	11	11	18.5	18.5	25	30	30	11	11
FUSE TYPES TO BS88																NS	NS
OVERLOAD CAPACITY																	
Fuse rating gG	16	25	32	40	63/40	80	100	125	20	32	40	63/40	63	100	125	20	32
Short circuit current with fuses (kA Rms)	50	50	50	50	20/50	40	20	15	50	50	50	20/50	50	20	15	50	50
Asymmetric short time rating current (kA peak)	6	6	6	6	6	9	9	9	6	6	6	9	9	9	9	6	6
Admissible short time current 1 s. (kA Rms)	1.26	1.26	1.26	1.26	1.26	1.5	1.5	1.5	1.26	1.26	1.26	1.5	1.5	1.5	1.5	1.26	1.26
MAKING & BREAKING CHARACTERISTICS																	
Breaking capacity (A Rms) 415 V AC 23 A	128	200	256	320	504	640	640	640	160	256	320	504	504	640	640	160	256
Making capacity (A Rms) 415 V AC 23 A	160	250	320	400	630	800	800	800	200	320	400	630	630	800	800	200	320
WITHSTAND																	
Mechanical (number of operations) x 1000	100	100	100	100	100	30	30	30	100	100	100	100	30	30	30	100	100
Electrical (number of operations at 415V AC 23A) x 1000	3	3	3	3	3	1.5	1.5	1.5	3	3	3	3	1.5	1.5	1.5	3	3
CONNECTION																	
Maximum Cu cable section (mm ²) lth	16	16	16	16	16	50	50	50	16	16	16	16	50	50	50	16	16
using stranded cable (mm ²)	25	25	25	25	25												
WEIGHT (KG)																	
3 pole	0.13	0.13	0.13	0.13	0.13	0.26	0.26	0.26	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.0	3.0
4 pole	0.18	0.18	0.18	0.18	0.18	0.34	0.34	0.34	2.00	2.00	2.00	2.00	2.50	2.50	2.50	3.0	3.0

63* = Size 2 Enclosure

APPROXIMATE DIMENSIONS (mm)



BOX	A	B	C	D
A	130	85	75	105
B	175	125	100	137
C	250	175	100	135
D	310	200	135	170
E	410	200	135	170
1	220	158	136	172.5
2	325	158	136	172.5

FULL LOAD CURRENTS OF MOTORS (approx)

Please note that the kW and HP ratings given below and elsewhere in this publication are to be used only as a guide to the selection of the required starter. The actual full load current of the motor should be determined to ensure that a starter having a suitably rated overload relay is chosen.

RATING OF MOTOR		ALTERNATING CURRENT (A)					
kW	HP	Single phase	Three phase				
		240V	220V	380V	415V	440V	500V
0.06	0.08	1.2	0.38	0.22	0.21	0.19	0.16
0.09	0.12	1.5	0.56	0.33	0.30	0.28	0.24
0.12	0.16	1.8	0.76	0.42	0.39	0.37	0.33
0.18	0.25	2.8	1.1	0.58	0.52	0.49	0.46
0.25	0.33	3.2	1.4	0.88	0.71	0.64	0.59
0.37	0.50	3.5	2.1	1.3	1.2	1.1	0.85
0.55	0.75	4.8	2.7	1.5	1.4	1.3	1.2
0.75	1.0	6.2	3.3	2.1	2.0	1.7	1.5
1.1	1.5	8.7	4.9	2.6	2.5	2.3	2.1
1.5	2.0	11.8	6.2	3.6	3.5	3.1	2.6
2.2	3.0	17.5	8.7	5.1	5.0	4.4	3.8
3.0	4.0	20	11.6	6.6	6.5	5.8	5.1
3.7	5.0	24	14.2	8.2	7.5	7.1	6.2
4.0	5.5	29	15.3	8.5	7.7	7.6	6.5
5.5	7.5	36	21	11.5	11	10.3	8.9
7.5	10	45	27	15.5	14	13.5	11.9
11.0	15	70	39	22	21	19.3	16.7
15.0	20	91	53	30	29	27	23
18.5	25	113	64	37	35	32	28
20	27	128	70	40	38	35	31
22	30	135	75	43	40	38	33
25	34	156	85	50	45	42	38
30	40	180	101	60	54	51	44
37	50		124	72	66	62	54
40	54		134	79	77	67	60
45	60		150	85	80	74	65
55	75		181	105	98	90	79
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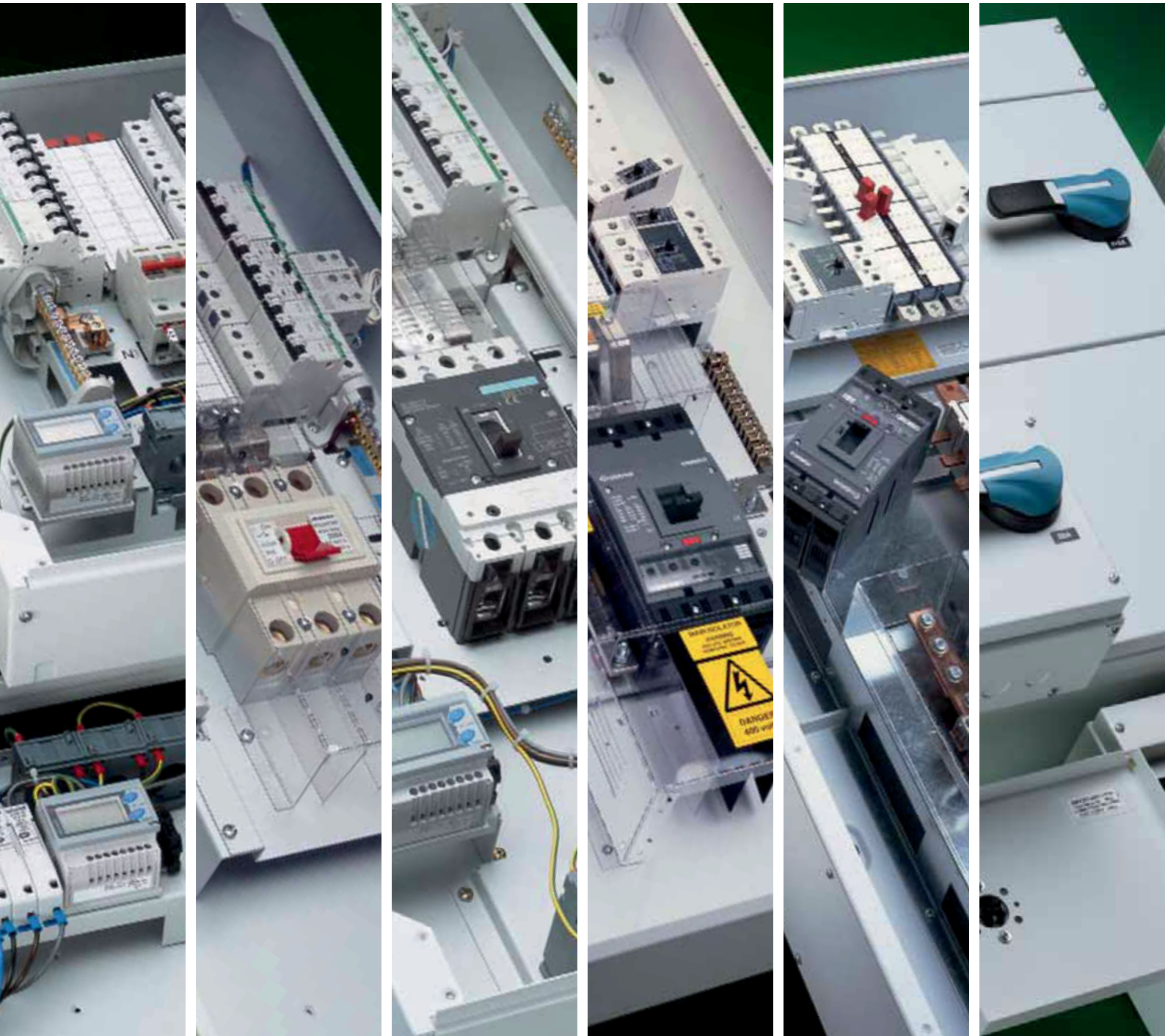
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